

# The Iron Age

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A Review of the Hardware, Iron and Metal Trades.

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## The Arendt Punching Machine.

The want of a good hand punch for beams, channels and other shapes has often been felt in the handling of architectural ironwork. The engraving which we present showing a machine of this kind will therefore no doubt prove interesting. It is very simple in design, can readily be moved about from place to place, and, from what we have seen of it, is capable of performing very satisfactory work. It operates on the lever principle, as the illustration very clearly shows, a long leverage being provided for. The hand lever at the extreme left is pivoted to the lower part of the frame of the machine, power being transmitted from it to the lever which is in direct connection with the punch, by means of the left-hand rack. This rack, it will be noticed, is pivoted at its lower end to the hand lever, and will freely move upward with it. On the return stroke, however, it engages with a pawl fitted to the main lever and forces the latter, and through it the punch proper, downward. On an average three or four down strokes are required to bring the punch through the work. On each upward stroke of the hand lever the main punch lever is held down at approximately the point to which it had previously been brought by the right hand rack. This, it will be understood, is so arranged relatively to a second pawl that it will readily permit downward but not upward travel of this lever. By means of the hand lever shown at the top of the machine, the punch can be easily and quickly brought back to the limit of its up-stroke.

The work operated upon can be moved along on rollers, as shown, arranged on a saddle supported by the frame. By turning the two cranks at the top of the machine this saddle, and of course with it the rollers, can be raised or lowered according to the requirements of any special piece to be punched. The machine will punch holes up to 1½ inches in diameter in 20-inch steel beams. It is of German design, and is put on the market here by Messrs. Charles G. Eckstein & Co., 32 Liberty street, New York.

## Morbid Anatomy of Ships.

The London *Engineer* discusses in an interesting manner causes of loss at sea, which have been given comparatively little attention.

Every one knows, says our contemporary, that ships built of wood are very liable to "spring a leak," and many suppose that, because this is the case, a similar misfortune might as reasonably befall an iron or steel ship. That vessels built of iron and steel do occasionally spring a leak is only too true, but the circumstances which lead to such a defect are totally distinct from those which lead to leakage in a wood ship. The leakage in the latter might be due to decay in the caulking, or to starting a butt by straining; but neither of these causes should be looked to in order to explain leakage in an iron or steel ship. The caulking of the latter should rather be improved by the corrosion which increases with the vessel's age; while if she is strained at all so as to admit water, then something more serious than a leak might be expected to result. So rigidly are the parts of an iron or steel ship united to each other that no water can be admitted into her by straining without rivets being sheared or plates torn, and if either of these events occurred the foundering of the vessel would soon follow. It is not alleged that casualties of this kind have never occurred, for unfortunately the contrary is the case; but such a disaster can in no wise be attributed to the effects of age, wear and tear, such as will sometimes account for the destruction of a wood ship's fastenings. When an iron or steel ship founders through straining the loss is due either to weak construction or bad workmanship. As a general rule, then, whenever such a ship is reported to be leaky, it may be averred that straining is not the cause; for when straining produces a leak it produces a fracture also, and a fracture will in most cases result in total loss. In saying this it is not implied that an iron or steel ship is never submitted to undue stresses, or as to be, technically, strained. But of plating do, no doubt, at times show indications of movement when examined in a graving dock, and such movement may occasionally be due to undue tensile stresses; although in most cases they result simply from local flexibility. But to suppose that water has ever passed through such butts into the vessel without the cement on the inside of the plating being disturbed is, of course, wholly out of the question.

Despite these common-sense necessities of the case, it is not unusual to come across reports of iron and steel vessels—especially steamers—having suddenly sprung a leak, and been therefore abandoned by their crews. In such cases it has been often assumed that the loss was due to straining, whereby a butt or other joint was opened in the bottom plating, and this, too, under circumstances such as the lost vessel and others similar to her had previously encountered successfully. Now, whatever may be the real causes of these disasters, there can be no doubt that they are at the root of a large proportion of those casualties regarding which no evidence is attainable in consequence of the loss of all on board. No

better means can be afforded for the solution of this problem than the frequent examination of iron and steel vessels when in graving dock. Some of the phenomena witnessed upon such occasions are painfully suggestive of the causes of many losses at sea which are never heard of. The particulars of two or three of these, without mentioning the name of ship, locality, or date of incident, will perhaps be of interest and profit in the consideration of this important subject. The first case is that of a new iron ship which arrived in a home port after a voyage of about three or four months' duration, in a very leaky condition, so that she had to be kept afloat with steam pumps while her cargo of raw sugar was being discharged. Subsequent examination showed that inferior cement, largely adulterated with ashes, had been cut up by rivets, bolts

in a foreign port, the risk due to this species of casualty would be much reduced. In this country an annual examination of the cement is generally insisted upon by Lloyd's Surveyors, but during the time that an iron or steel sailing ship is usually absent from the United Kingdom or a European port, a great deal of mischief may take place below the close ceiling without the same being suspected by those on board. Cases sometimes occur in which a rivet, nut or small bolt continually rolling from side to side in a frame space, has been found to have not only cut through the cement, but also to have scored a deep groove in the garboards, while instances in which the rivet heads in butt straps and plate laps have been wholly or nearly worn away are not at all uncommon. When one comes across a phenomenon of this kind the importance of

further attack. In this way the bottom plating of the steamer, in both cargo holds, was worn in deep pits, of which happily only one extended through the plate. If this vessel had, however, been making a somewhat longer voyage, so as to admit of many holes being corroded through the plating, then abandonment would have been necessary, and in that case the survivors would doubtless have persisted in asserting that she really "sprang a leak by straining." If the crew had taken to the boats, and the latter had been swamped, so that no one survived, this would have been another of the missing ship mysteries, which are explained in the Wreck Courts as being due to well decks, overlading or an inflammable coal cargo.

In the case just considered the leakage was clearly traceable to two acts of neglect

blows was it broken. But cement was cement in those days, and not the adulterated mixture one sometimes comes across in this degenerated age. Moreover, sharp fresh-water sand was used in mixing such cement as that, and not the dirty saline substitute now too commonly employed.

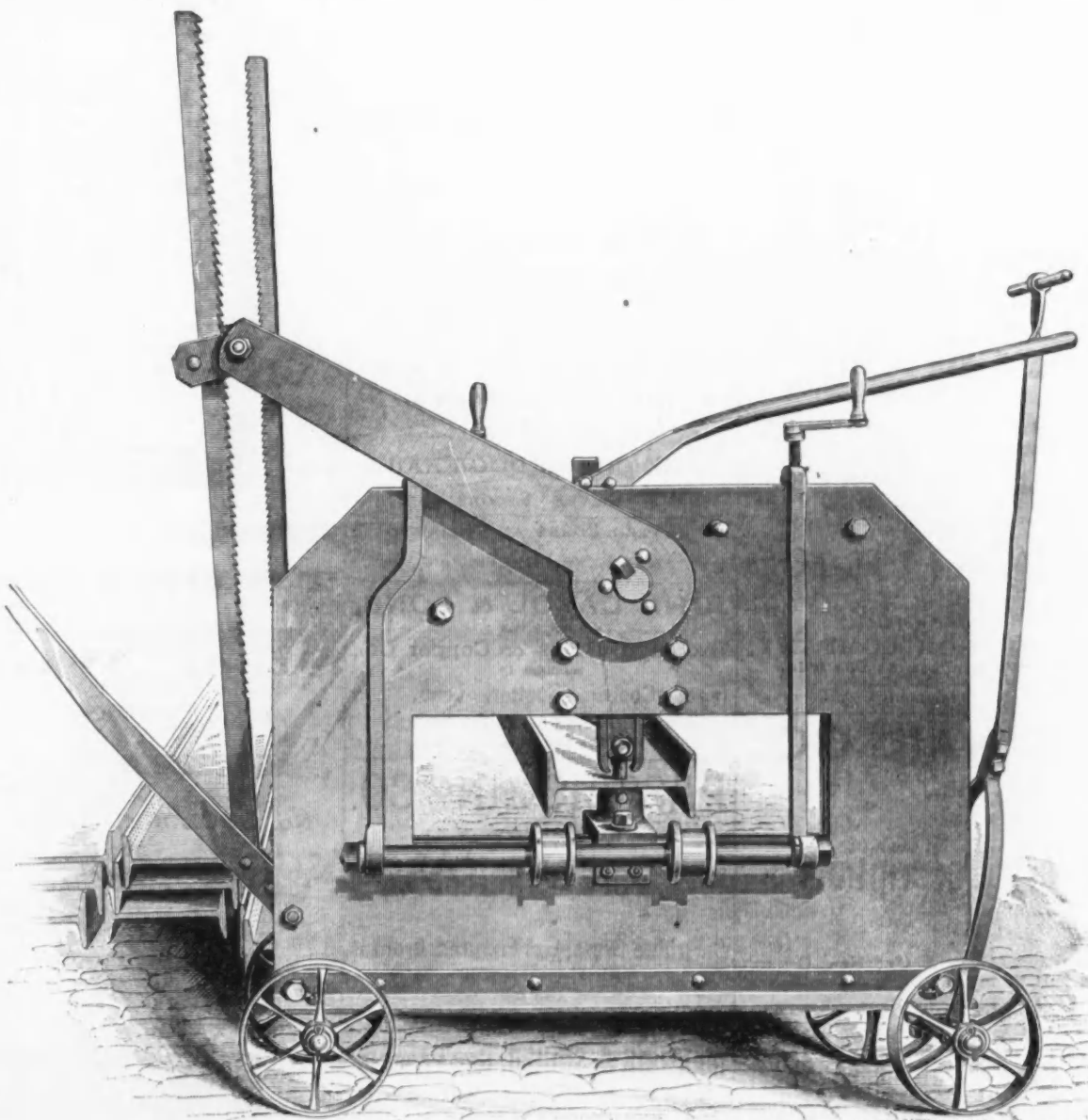
A careful and frequent study of what Mr. W. Denny, of Dumbarton, has very aptly styled "the morbid anatomy of naval architecture," will reveal some very important truths in connection with the construction and upkeep of ships. The necessity of using good and properly mixed cement is one of these, and the importance of keeping the ceiling in good condition is another. Both of these have been illustrated by what has already been said. But it is equally important to preserve perfect and easy accessibility to all the parts of an iron or steel ship, so as to make it not only possible to examine them, but also to render it probable that they will be examined throughout. It is to be feared that the disagreeable task of crawling through the slimy deposit in the bottom of a cellular hull tank space is calculated to lessen the probability of a frequent and careful examination of such parts being made, but as there are two bottoms to such ships, and as part of the cargo can get into the cellular bottom, the risk is not a great one. The wear and tear by corrosion in the machinery space of steamers would be much greater than is usually the case, were it not for the quantity of grease which is always present and found adhering to floors, reverse frames, engine seatings, &c. Below the boilers, especially when the latter are leaky, corrosion goes on at a very rapid rate, but it rarely extends beyond the boiler bearers, keelsons, reverse frames, and floors. This is, however, wholly due to the presence of cement, and the rapidity with which the other parts in the vicinity are wasted affords an additional reason for making frequent examinations beneath the boilers and stoke-hold floor plates, especially in the neighborhood of copper pipes. The average durability of a marine boiler is fully as great as that of the bearers and frame beneath it, so that whenever a steamer's boilers are renewed it invariably happens that heavy repairs are required to that part of the hull which is inaccessible when the boilers are in place.

## Electric Propulsion of Street Cars.

The recent experiments on the Fourth avenue street railway, in this city, with the Julien electric storage battery system, have awakened renewed interest in the substitution of electric motors for horses on street cars. Many will be surprised by the statement that more than 3,500,000 passengers are carried annually in this country on street cars moved by electric motors. In Montgomery, Ala., electricity is used on 11 miles of road, and the cost is reported by the general manager to be only one-half the cost of horse-power. Roads on which electricity takes the place of horses are found in Baltimore, Los Angeles, Port Huron, Detroit, Scranton, Appleton, Wis., and Denver. Electric railways are either in course of construction or under contract in 12 other cities, and in 37 companies have been formed or other steps taken for the building of such roads. Upon none of the roads now in operation in this country, however, is force supplied by storage batteries attached to the cars. In most cases power is communicated by an overhead conductor. More than 3,000,000 passengers are carried every year by electric railways in Europe. The Frankfurt-Offenbach line has 4 miles of double track, uses 14 motor cars, and carries 990,000 passengers. The power is communicated by overhead slotted tubes. But the roads in Brussels and Hamburg are operated by storage batteries, as in the Julien system. The system of independent motors attached to the cars is clearly to be preferred if it will do the work that is done by the more cumbersome systems and do it at no greater cost. The storage batteries can be placed under the seats of a car. They are so arranged that the amount of power used can be quickly reduced or increased by the driver. Each car is independent of all others, and its movements do not depend upon the transmission of power from a stationary center of generation.

Air is so easily heated compared with water that many people are deceived respecting its capacity as a means of conveying heat. The inverse fact is lost sight of, that being easily heated, air is easily cooled. One pound of water occupies 27½ cubic inches, and one pound of air at the pressure of the atmosphere occupies 22.464 cubic inches. The heat needed to raise the temperature of the water one degree will raise the temperature of the pound of air nearly four degrees, so that the large volume in one pound of air will not give off more than ¼ of the heat that the small body of water will part with. These are facts that parties intending to heat cars by air would do well to ponder over.

Mr. H. D. Gordon, master mechanic of the Philadelphia, Wilmington and Baltimore Road, has charge of a locomotive, No. 317, an ordinary eight-wheel engine, which ran 17,112 miles in passenger service during the month of May. This was double service, but it is the greatest mileage for one engine that has probably ever been recorded.



THE ARENDT PUNCHING MACHINE, FOR BEAMS, CHANNELS AND ARCHITECTURAL IRONWORK.

and pieces of wood rolling about in the limbers on the outward passage of the vessel, and that on her homeward passage the fermented drainage of the "green sugar" had dissolved her plating throughout its entire thickness in many places, while the thickness was considerably reduced elsewhere. Had the homeward passage of this vessel been of much longer duration it would have been impossible to keep her afloat, and had the sea in that case been too stormy for the crew to escape in boats it is very doubtful if the real cause of the disaster would have been suspected by anybody, while it is equally probable that an inquiry in the wreck courts would have resulted in the decision that she was overladed or unstable.

The case just quoted is, of course, an unusual one, although it is worth remarking that a sister ship by the same builder, and engaged in the same trade, was within an interval of a few weeks found to be in a similar condition. From this it may be inferred that, given inferior cement, hard substances rolling between the frames and a sugar cargo containing molasses, the durability of the bottom plating of an iron or steel ship may be measured in weeks and days. Indeed, it is doubtful whether even the hard substances lying loosely between the frames are essential conditions for bringing about maritime disasters in this way, for inferior cement will ultimately wear away by the mere motion of the bilge-water, and this inevitable wear is only hastened by hard substances rolling upon it. If shipmasters made a rule of always carefully lifting ceiling hatches of iron and steel ships, and examining the condition of the cement before loading a sugar, or indeed any, cargo

punching plates from their meeting surfaces becomes clearly apparent, for only the slightly increased diameter of the rivet on the inside of the ship prevents it from falling out when the head is worn away.

But sugar is not the only corroding cargo carried in iron and steel ships, and loose rivets and nuts are not the only foreign substances which are known to cut up the cement between the frames. This will be seen by considering a second illustrative case, which is that of an iron steamer employed for many years in the coasting coal trade, with only one voyage to Spain for copper pyrites, made rather less than a year previous to the date of the examination, to which reference will now be made. The steamer in question suddenly "sprang a leak," so her master said, and was placed in a graving dock in order to discover the nature of the damage which it was alleged had been sustained by straining at sea. When the dock was dry it was found that water was flowing out of a small hole in the bottom plating, and upon lifting the ceiling in way of the same the cause of the leakage was at once revealed. The ceiling had been allowed to decay in places, so that portions of the copper pyrites, which once formed her cargo, had fallen through upon the cement. The rolling motion of the steamer had caused the pyrites to wear away the cement until sulphide of copper, immersed in bilge water, rested upon the vessel's iron plating. Under such conditions as these it inevitably happened that the sulphur left the copper and attacked the iron, forming a red pasty substance, which was quickly washed aside by the rolling bilge water, leaving a clean surface of iron for

viz., that of the ceiling, in the first instance, by not keeping it in proper repair; and that of the cement, in the second place, by not submitting it to as frequent an examination as is possible. But are not both these very common subjects of negligence? Do not shipowners often grumble at being called upon to repair and renew ceiling, urging that no structural strength is contributed by it, and forgetting how essential is perfectly close ceiling, from bilge to bilge, to the safety of a ship? Do not shipmasters often place stiffening under the main hatchway, when a part of the cargo is out, without allowing themselves time to look at the cement, and urge as an excuse that "the cement was looked to out of the country."

Portland cement has often been described as the very life of an iron or steel ship, and considering that, as a rule, the tendency to wear and tear from corrosion is much greater on the inside than on the outside of their plating, the substance in question is fairly deserving of the confidence reposed in it. If the cement is good and well looked after, the inside surface of the plating from bilge to bilge can suffer no injury whatever from the usual acid water lying in the limbers. Ships have been known to "float upon their cement," one case in particular being that of an old passenger steamer, which when examined in graving dock by striking the bottom with a hammer, yielded so dead a sound at one place, that a closer inspection was made, revealing the unlooked-for fact that cement and not iron was being struck. The bottom plating was, indeed, wholly wasted by corrosion at the place which was struck, but so hard was the cement that only by many and vigorous



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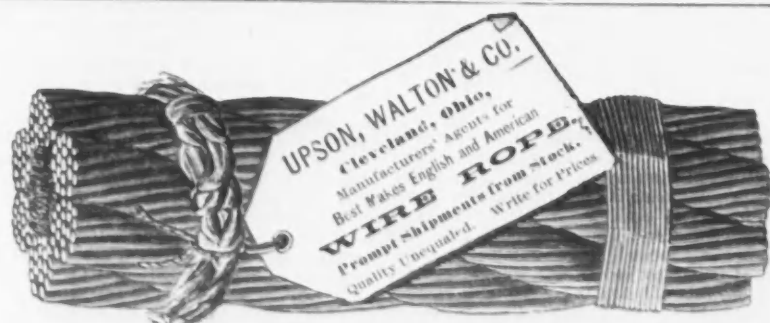
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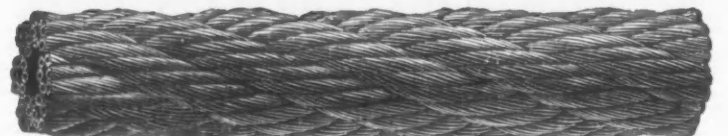
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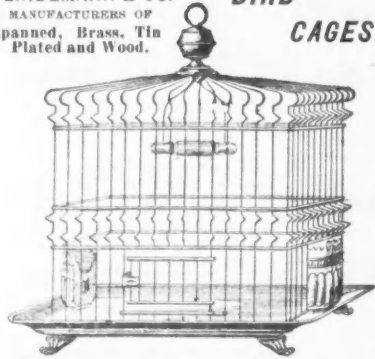
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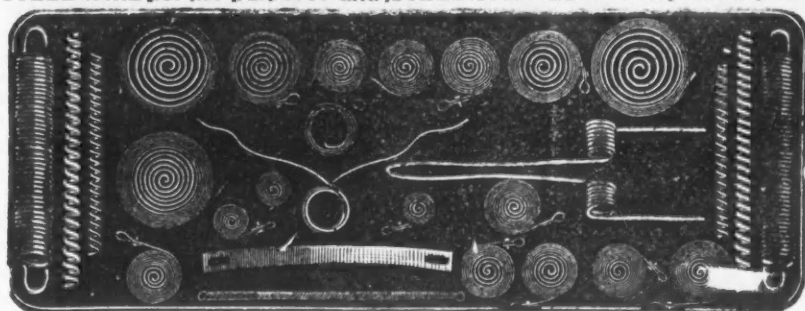
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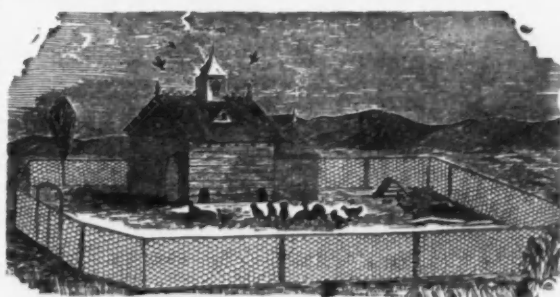
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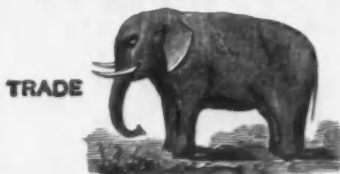


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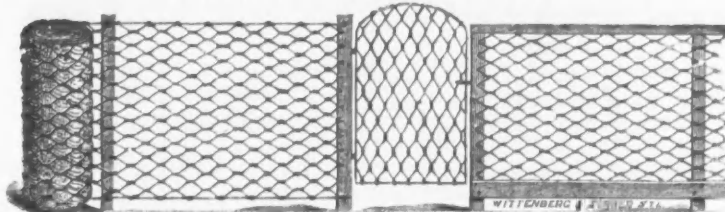
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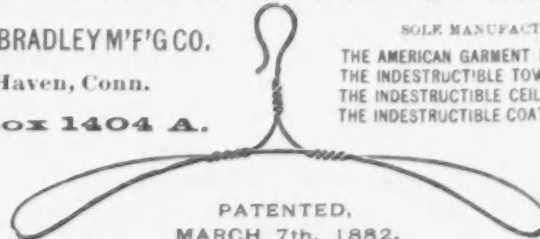
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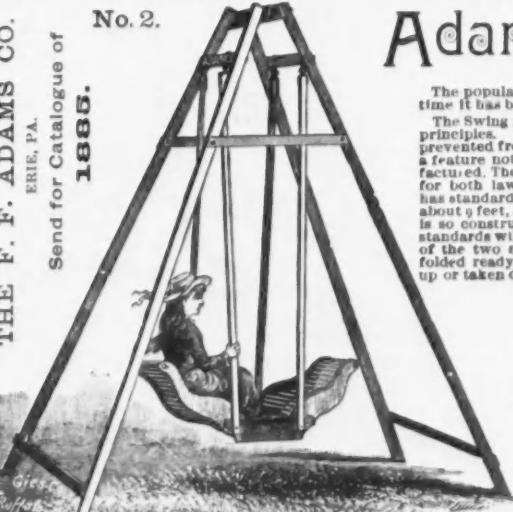



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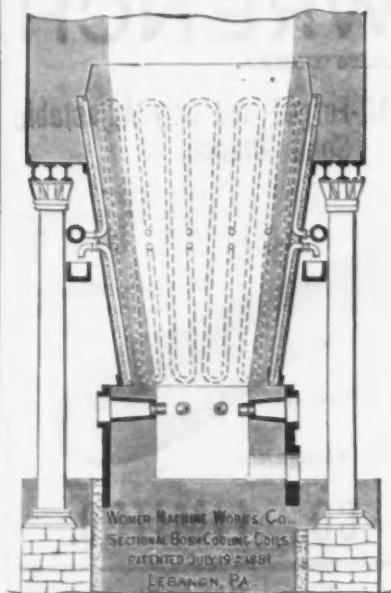
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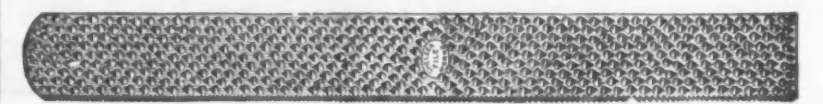
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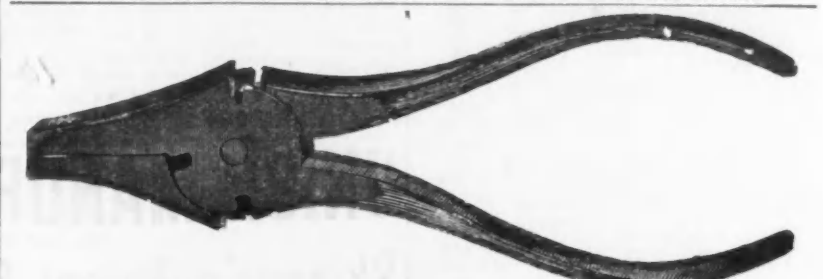
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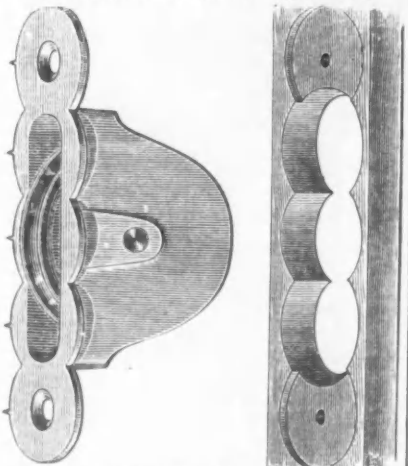
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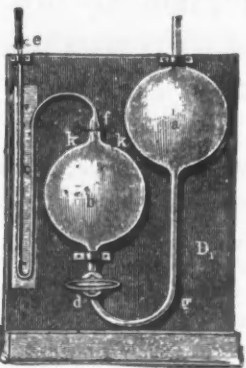
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## English Letter.

(From Our Regular Correspondent.)

LONDON, June 27, 1887.

## THE JUBILEE

is now about at an end, and people are beginning to settle down to their ordinary avocations, after a week's continuous festivities. In these festivities, by the way, a very large number of Americans have taken part, and our streets have resounded with the accent which we poor Britishers associate with the speech of our friends from across the Atlantic—and cannot acquire ourselves. Now that we have all "jubilated" to our heart's content, people are trying to count the cost, and some of them have arrived at an estimate that about £2,000,000 have been expended on the decorations, illuminations and other "high jinks." Much of this has gone in wages, so that the expenditure must have been beneficial to the working classes. You may form some idea of the demand for certain kinds of skilled labor when I tell you that last week and the week before gas-fitters demanded and received 2/ per hour, and worked 14 to 16 hours daily! Even at that high price sufficient hands could not be had. As to the huge stocks of "Jubilee" goods I hear varying reports. In some sorts the stocks have been cleared off at any prices the vendors liked to ask, while in other cases the sale has been wretchedly small, and the dealers are badly left. Everything decorative or attractive moved off freely, but patterns of articles not suitable to the occasion, albeit dignified with a "Jubilee" title, have not hit the public fancy or taste.

Owing to the universality of the holiday-making there was really very little business done all last week. Men of business out all day and taking part in the illuminating, banqueting, dancing, &c., at night, had no time nor energy for work; hence the blank. Otherwise, so far as the general tone is concerned, I think it may be fairly said to be hopeful and rather firmer. The continued hot weather is putting the farmers into better spirits, and they are ordering goods with greater freedom. The hay harvest is making good progress and is being splendidly got in, while the wheat looks very well indeed. I report elsewhere on the iron market and hardware trades, and need only say here that the outlook is decidedly cheering.

## IN THE IRON MARKET

little or no movement can be reported. The tendency toward firmness noticed in my last letter has been well maintained, but nothing exceptional has occurred that would be likely to materially influence the market. As regards shipments of Scotch pig iron, they have been unusually small (the holidays being duly allowed for), notwithstanding the recent sales to Canada. A certain amount of iron has been sold for Transatlantic shipment, but whether any large quantity has changed hands is a point much doubted. This week there is understood to have been little or no special inquiry from America, Glasgow warrants have been firmer, and closed at £4. 2/9 per ton. In Cleveland the only feature to be noted is the firm attitude of makers, who declare that they will not conclude sales at anything below 35/ for No. 3 G. M. B. Buyers are not yet sufficiently anxious for business to give what is asked. Small lots for prompt delivery, therefore, continue to be the feature of this market. On the West coast the difference between consumers and makers has been decreased, second holders having, for the most part, disposed of the lots they bought some five or six months ago on speculation. Makers, however, still refuse business on a large scale at buyers' terms, and nominally quote from £4. 3/6 to £4. 4/6 per ton for mixed numbers. The Staffordshire trade has developed no change so far as the market is concerned, but the dryness of the season is becoming a serious matter, and it is anticipated that several of the works will have to close down for want of water. The galvanized and black sheet trade has presented no feature of change, while in bars, rods, hoops, &c., little has been done beyond meeting immediate requirements. Heavy engineering departments are, upon the whole, slightly better engaged. Further bridge work is being asked for, chiefly for Indian railways. For old rails and scrap rates are firm, holders showing much determination in adhering to their quotations. Quotations are: Old rails, 55/; heavy wrought scrap iron, 50/; iron fish-plates, 62/5, and leaf spring steel, 52/6 f.o.b. London or other good port. Freight remains as before and from all ports. From Glasgow from New York the regular liners are quoting 10/ per ton for pig iron, and freights at that price are not easy to secure immediately. Steel continues to be in excellent request, and the outlook is encouraging. Some good specifications are about to be issued by the India Office, while others are anticipated from the private railway companies of India. Inquiries for blooms are still before the market. Billets, both Siemens Martin and basic f.o.b. Glasgow and Middlesboro' are respectively about the same as last week. Steel rails are not in great demand for movement, but nearly all the works are still well employed. Among business done during the week has been the placing of the 6000 tons of heavy rails for China with Bolckow, Vaughan & Co., Limited, at a price of £4. 2/ (or thereabouts) per ton. The Continental competition for this order was remarkably keen. The railway for which the rails are required is intended to be the first passenger line in China, and when the whole road is completed it will put Peking in direct communication with the seacoast. It is noteworthy that the Chinese Government has resolved to have nothing to do with syndicates of any kind.

## TIN PLATES.

In London the market is certainly better. There has been quiet buying on American account, and some very large orders have been placed during the past week or 10 days. Makers are now showing a firmer front, and it is not easy to place orders below 13/3. f.o.b. Liverpool, for ordinary brands of IC cokes. At Liverpool, despite the jubilee rejoicing, there has been a great deal of business done in certain sorts of tin plates, principally in Bessemer steel cokes and Siemens steel plates with coke finish. The other sorts most asked for were coke tin plates and charcoal tinned plates. Quotations generally speaking have been run up, and 13/6 IC quoted for ordinary coke tins and Bessemer steel cokes. The other prices quoted for Bessemer steel cokes and coke tin plates are 13/9 and 14/ IC, and Siemens steel cokes 14/ at 14/6 IC. The demand for coke tin wasters as well as steel coke wasters is well kept up at from 12/6 to 12/10 1/2. Ternes are 25/6 at 28/6. The demand for charcoal tin plates is not very brisk, and prices consequently are cut very fine at 14/6 at 15/6 IC for charcoal tin plates and 16/ at 17/ IC for best charcoal.

## THE HARDWARE TRADES.

In London there is little of special moment to report, the jubilee festivities having put a complete stop to business, except among the firms who do a visitors' trade. However, there is a cheerful spirit manifested in most quarters, the general belief being that London business houses will feel the good effects of the circulation of so much money. The export trade is rather quiet on the whole, but some good lines have come to hand from the Cape and South America. At Birmingham, although necessarily a broken week for manufacturing trade, last week was by no means an unsatisfactory one for orders, which arrived more freely, both for home and export, than is customary in the closing days of June. Colonial demand is still disappointing, but there is more doing with the Continent, and especially with Germany and Spain, while the South American orders are well sustained. It is the home trade, however, which shows the most marked advance, the improvement being specially noticeable in the agricultural districts and seaside resorts. The new American screw which has lately been introduced in the English market is not viewed with any serious apprehension by English screw manufacturers, as the principle is a familiar one, with the merits and defects of which they are well acquainted, and it remains to be seen if it will prove acceptable to English users. The prohibition character of the new Canadian tariff has given a fresh impulse to the movement here in favor of branch manufacturing in protected countries. At Sheffield the cutlery, tool and plating trades are all quiet, but as regards cutlery an exception must be made in the case of certain houses. As a rule all the lighter trades are complaining of the dullness of the times. One Sheffield firm is busy on an important contract for the steel required for 400,000 rifles which the Turkish Government has ordered from the German firms.

## Mutual Fire Insurance in Chicago.

During the early part of May there was a meeting of representative Chicago business men and capitalists, who discussed the establishment in that city of a fire insurance company on the mutual plan, connected to a limited degree with institutions of a similar character in other large cities. The proposition was favorably received, and a committee, headed by John V. Farwell, Jr., was chosen to fully investigate the project and take whatever preliminary steps were necessary. This committee have now finished their labors, and as a result the establishment of a corporation to be known as the Prudential Fire Association of Chicago has been fully determined upon, and the preliminary notices of incorporation will be published within a few days. The capital stock will be \$200,000, of which more than half (about \$110,000) has already been subscribed for. Fifteen incorporators have been listed, including members of the following firms: John V. Farwell & Co., William M. Hoyt & Co., Crane Bros. & Co., Selz, Schwab & Co., C. M. Henderson & Co., C. H. Farwell & Co., Kelley, Maus & Co., C. P. Kellogg & Co., D. B. Scully, Crane Elevator Company, Martin Ryerson, Jr., and Willard, Parker & Co. F. S. Winston, Jr., has been appointed solicitor to the company, and is at work on the papers of incorporation. R. J. Bennett, of W. M. Hoyt & Co., is first on the list of incorporators, and is acting as president of the Committee of Organization.

Similar companies already established, or in process of formation, in New York, Boston, Philadelphia and St. Louis, will be entirely distinct as corporations, but will be co-operative for the lessening of expenses in the following way: When inspection for a risk is made by any one company of the group, this inspecting company is empowered to accept the same amount of risk for each of the affiliated corporations. In settlements the same plan will be pursued, thus making the running expenses of the whole group but equal to that of a single corporation under the old plan. We believe the expenses of each of the companies in the group will be but 20 per cent. of the amount expended by isolated corporations under the old plan. The shareholders also will be firms who carry a large amount of insurance, and it will be to their interest to transfer a large portion of their risks to the associated group, as they will thus reduce the cost of insurance by the profits accruing in their district corporation. In short, the scheme is a combination for the lessening of expenses 80 per cent. or more as the group increases, with the same service and a much better prospect for an extensive business than any isolated corporation.

A tremendous explosion took place in the Collonite Works, at Arlington, N. J., last Thursday, where a large quantity of gun-cotton had been stored, and the shock was felt throughout Hudson County. Two persons in the works were killed instantly and the buildings blown to pieces. The machine shop of Beckett & McDowell, opposite the scene of the explosion, was shattered, and the skate factory of H. E. Ashcroft was similarly wrecked.

The steamship Merrimack, built in Boston in 1861, went ashore in a fog on her first trip for the season between Halifax and Boston, and is a total loss.



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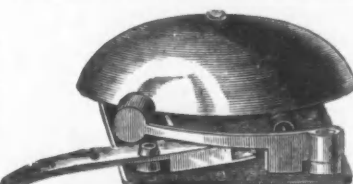
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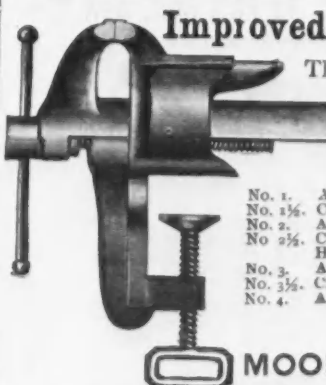
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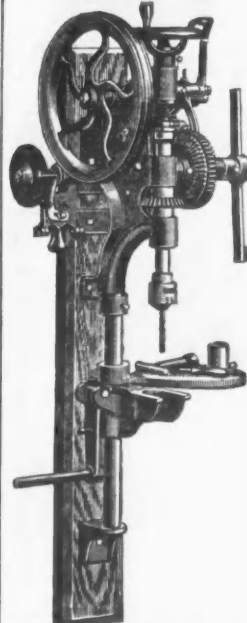
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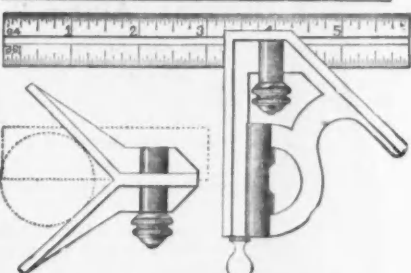
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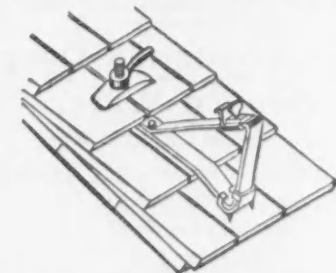


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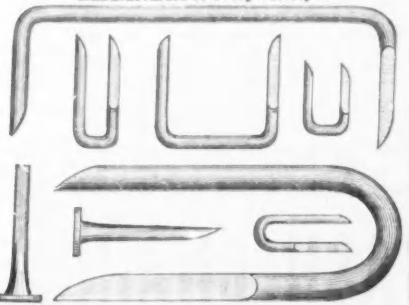
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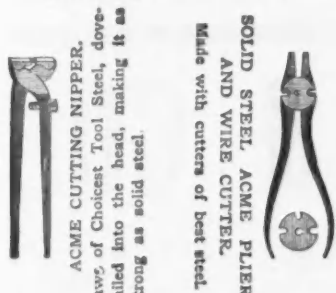
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EIGHT SIZES.

813	- - -	1 inch.
823	- - -	1 1/4 "
833	- - -	1 1/2 "
843	- - -	1 3/4 "
853	- - -	2 "
863	- - -	2 1/4 "
873	- - -	2 1/2 "
893	- - -	3 "

WITH STEEL SHACKLE.

844	- - -	1 1/4 inch
854	- - -	2 "
864	- - -	2 1/4 "
874	- - -	2 1/2 "
894	- - -	3 "



No. 843.



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### THE WEEK.

Statistics prepared by an expert member of the Board of Trade, in London, designed to show the enormous sums of money sent back to the United Kingdom by emigrants to the United States, indicate that the amount thus remitted during the last six years has averaged \$7,425,174 per annum.

Large workshops are to be built somewhere on the line between Bridgeport and New Haven for the New York, New Haven and Hartford Railroad Companies. As one of the companies concerned employ not less than 5000 men the united movement which has been resolved upon insures the building of a town of considerable magnitude.

Extensive works and about 100 houses will be erected without delay for the South Baltimore Car Company near Baltimore. The buildings will be covered with corrugated iron.

A cotton press and warehouse 250 feet long are to be erected in Jacksonville in season to handle the new crop of cotton.

Among the statistics that show a revival of prosperity are those which relate to foreclosure sales and the appointment of receivers in the railroad world. In the first half of the current year the foreclosure sales, as reported by the *Railway Age*, embraced 2418 miles of road, whose securities amounted to \$157,000,000. In the corresponding months of 1886 the mileage of roads sold under foreclosure was 5912, representing an apparent investment of \$292,000,000. This year one-fifth of the mileage and nearly one-half of the apparent investment recorded were supplied by the Nickel Plate Road. It is predicted that the sales of the remaining six months will not equal those of the first half of the year.

Now that the new Mexican tariff is in operation, the railroads connecting the Mexican capital with the United States announce their new rates for freight, after making sweeping reductions, in the belief that with encouragement trade between the two countries will soon acquire larger proportions, ultimately compensating the various transportation companies for any temporary loss. These companies assume the responsibility thrown upon them by the Interstate Commission, content to stand by the result. In justification of the new departure General Freight Agent Michaelis, of the Mexican Central, whose headquarters are at the City of Mexico, will make a comparative statistical report, based on the actual tonnage for the next few months as compared with a like percentage under the old rates. The points to which rates are quoted are Santa Rosalia, Jimenez, Mapime, Lerdo, Jimulco, San Isidro, Fresnillo, Zacatecas, Soledad, Aguascalientes, Lagos, Leon, Silao, Marfil, Irapuato, Salamanca, Celayo, Queretaro and the City of Mexico, and the roads issuing the joint tariff are the Missouri Pacific, Mexican Central, Atchison, Atlantic and Pacific system of the Southern Pacific Company, Burlington, Rock Island, Wabash Western and Wabash Railway, Alton, Frisco and Texas and Pacific. The dividing line has been extended north on the Mexican Central to Santa Rosalia, instead of Lerdo, as hitherto. Unless prepaid, all charges will be payable in Mexico in Mexican silver at current rate of exchange, through rates not including expense of custom-house entry and dispatch at Paso del Norte. A warehouse has been established in El Paso for the purpose of affording free storage of goods consigned to Mexico while awaiting such entry and dispatch, and is in charge of a joint agent appointed by the lines represented. The following table institutes a comparison between the old and new rates to the City of Mexico on some of the important classes of shipments from St. Louis:

	New.	Old.
Agricultural implements, set up, boxed.....	\$3.91	\$8.72
Agricultural implements, knocked down, boxed.....	3.30	4.98
Agricultural implements in car-loads.....	2.38	2.44
Ale and beer, carloads.....	1.61	2.05
Bacon, hams and shoulders, car-loads.....	2.38	2.80
Blue vitriol and bluestone.....	2.67	4.09
Boots and shoes, boxed and strapped.....	3.91	4.98
Drugs and medicines.....	3.91	4.98
Dry goods (N O S.) in boxes.....	3.91	4.98
Furniture, carloads.....	2.67	2.85
Harness, boxed.....	3.30	4.67
Machines and machinery, car-loads.....	2.38	2.44
Machines and machinery (N O S.) knocked down, boxed.....	3.30	5.52

Senator Stanford's vineyard in California is said to be the largest in the world. It extends for several miles up and down on each side of the road as you approach Vina, and back from the road as far as the eye can reach. In some places the vines are large, in others they have just been set out, and in the latter case they are supported by an army of stakes. The winery already in use on the ranch is a large building, but now Senator Stanford is having a brick structure erected which covers two acres. The walls are already up, and 140 pillars are being erected to support the roof. The building is to hold the wine vats and casks, and is a sort of a wine cellar above ground. It is of mammoth proportions, but so is the vineyard, and so will the crop of grapes be.

A recent dispatch from Berlin says: Russian metal duties have already had an adverse effect upon the German iron trade. Returns show an increased production, without fresh markets to compensate for the loss of Russian trade. The result is that furnaces are being blown in Upper Silesia, and

iron and steel associations report that, while superior pig iron is in fair demand, the production of puddling iron far exceeds the demand, and prices have fallen over 4 marks.

The plan of the German Government to provide for workmen in their old age will be applied at first only to industrial workmen, of which it is estimated the number is 7,251,000. The minimum pension to be allowed is 120 marks yearly, the State, employers and workmen each contributing one-third of the pension fund, which will be a tax on each individual of 3 marks yearly. It is estimated that a State credit of 22,000,000 marks will be required. All workmen over 50 years of age, when the bill is passed, will be excluded from its benefits.

Of machinery at Lessep's canal excavation in Panama there is no lack, but it is not highly prized. Arthur W. Rondier, formerly Venezuelan Consul at Boston, who passed several months in the service of the canal company, says: "A vast amount of useless material is sent to Panama, by what influences I do not think I had better attempt to guess. All this material can be seen for itself. It tells its tale of uselessness far better than I could do. It is entirely lost. There are too many locomotives, too much iron, too many furnaces and too much stuff of a similar description. These goods are simply abandoned and left on the ground. An immense amount of money could be economized by more intelligently superintending the goods sent out. There is a fortune there in the way of machines, which would be better out of the way. Not the least notice is taken of them as they come. People do not even take the trouble to examine them. Whatever they are they are not wanted, and that is the end of it."

General Master Workman Powderly, in the *Journal of United Labor*, pays his respects to the grain and stock brokers. Referring to the recent corners in coffee and wheat, Mr. Powderly says: "The lesson taught our members by the experience of the past six weeks is to keep their eyes open, and to keep them turned toward the Produce Exchanges of New York, Chicago and other large cities, and the moment the grain or produce gambler stacks the cards and announces that there is a scarcity in a certain article of food—that the price goes up in consequence—every member should resolve, and resolve out loud, that until the unhal- lowed hand of the speculator has been removed from the control of the article in question not a pound nor an ounce more than can be avoided will be purchased. This may be regarded in the light of a boycott notice—that is exactly what I intended it for; and had I the power vested in me to make the order imperative, I would order every member, so far as in him lies the power, to place an eternal boycott on every grain and stock gambler in the United States and Canada."

Jackson Bailey died in Brooklyn, 6th inst. He was a member of the Electric Club, of the Mining Engineers, and of the American Society of Mechanical Engineers, and was also First Vice-President of the New York Press Club, and one of the proprietors of the *American Machinist*. He was 41 years of age, and leaves a widow.

Several dynamite cartridges which had been placed in holes drilled for blasting on the new aqueduct were exploded by lightning, although the wires were disconnected from the battery at the top of the shaft.

Shipbuilders are showing an increased interest in the construction of the 19-knot cruisers authorized by the last Congress, and within a short time past applications for copies of the specifications upon which proposals must be based have been received at the Department from the leading shipbuilders of the United States.

The New York Legislature, during the late session, passed an act allowing the appropriation of \$750,000 for park construction and improvement in this city. The bill specified that of the total amount \$250,000 should go to Central Park, and a similar amount to Morningside Park; \$200,000 to Riverside and \$50,000 to Mount Morris and East River parks. The clause relative to expenditure on Central Park provides for the embellishment and improvement of Manhattan square, now a part of the Park, and the reconstruction of the grounds about the Metropolitan Museum of Art. The Park Commission find some difficulty in selecting a man competent to undertake the work.

A rupture has occurred in the relations of the Emigration Commissioners at Castle Garden, and the so-called "American Emigrant Company," represented by Mr. Savary, of this city, which promises interesting disclosures. Up to within a few months ago the latter concern was known as The American Emigrant Company, of Hartford, whose president was the notorious G. M. Bartholomew, of that city, who migrated Canadaward and left the many companies of Hartford and New York, with which he at that time was officially associated, in a badly wrecked condition.

The expected revolution in the Hawaiian Islands has taken place, the leading citizens of Honolulu having demanded the abdication of the King, and a cabinet headed by Wm. M. Green has been appointed to succeed the Gibson ministry. King Kalakaua is permitted to remain on the throne, although divested of all present power, having acceded to the demand for a new constitution, and to abide by the will of the people. The



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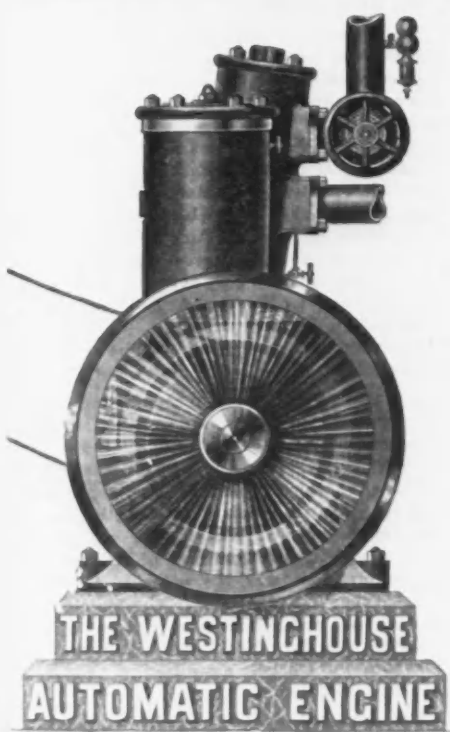
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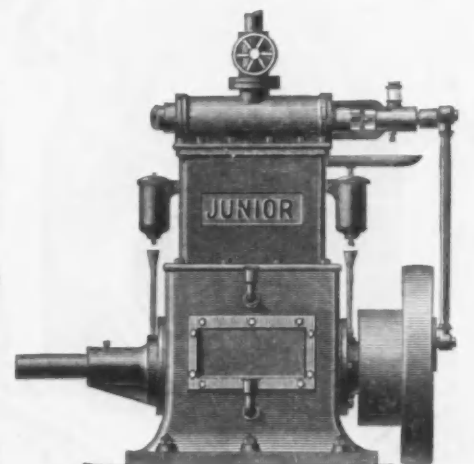
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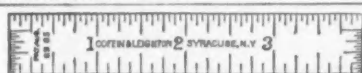
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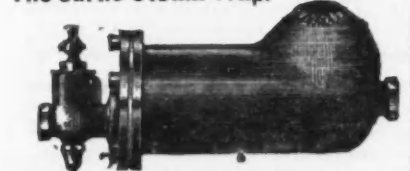
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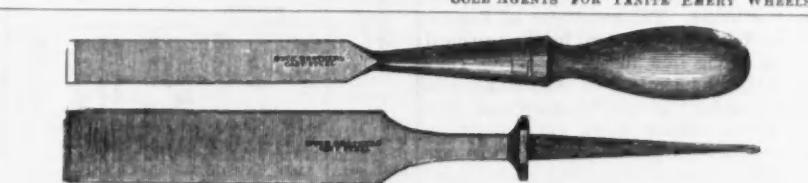
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King was thoroughly alarmed, and on July 1 called a meeting of the American minister, the British commissioner, the French commissioner and the Portuguese commissioner, on whom he offered to transfer the *pro tem* powers vested in him as King. These officials refused to accept the trust, but advised the King to lose no time in framing a new constitution, which advice he followed. Walter M. Gibson, his son-in-law, and F. H. Hayseldon are under arrest, having been seized by the civic troops when attempting to escape. H. A. Carter, the Hawaiian minister at Washington, says that, although the head of the new cabinet is an Englishman by birth, American interests are in no sense jeopardized.

A corporation has been formed to rebuild the property known as the Madison Square Garden at an outlay of \$1,000,000. The structure will be of brick or stone outside and iron inside, and contain an amphitheater capable of seating 8000 persons, besides apartments suitable for a menagerie, together with studios, lecture-room, &c. The roof will form a garden for summer or winter.

The Merritt Wrecking Company are attempting to raise the steamer Wells City, which was sunk in the North River last winter with a cargo of tin plates. Pontoons have been placed on each side of the hull, and chains placed beneath the keel, with the expectation that the vessel will be raised by the buoyancy of the pontoons, when the latter are pumped out. At the first attempts the chains were cut through by the edge of the keel, and the effort will be repeated.

Large advances in the valuations of real estate in this city are recorded, as a consequence of the proposed extension of the Elevated Railroad to King's Bridge, and as the lines of the proposed thoroughfare from 125th street along the Harlem River, have been legally fixed, it becomes an interesting question when the Government will begin the work on the Harlem River for which money was appropriated by Congress.

A committee of the New York Board of Education report in favor of manual training in the public schools as a means of overcoming the growing distaste for manual labor among young persons of the present generation, but the committee do not favor separate schools for the purpose of extending the course of instruction.

The California wheat year just closed shows receipts at the wheat ports amounting to 900,000 short tons, considerably exceeding those of the previous year. Farmers are hastening their harvest in hopes of realizing the prices now current.

The great increase in the marketing of cattle is felt all over this country and Canada. The great stock States of the interior—Illinois, Indiana, Kentucky and Missouri—feel seriously the effect of present low prices, and so do the Middle and Eastern States.

The building materials trade of this city was suddenly embarrassed by a strike of cartmen, who demanded cartage rates at a certain figure per day, irrespective of the amount of work done. The strike ended in an understanding by the employers that only unionists shall be employed, and that contract work shall be entirely superseded by day work.

The Post Office Department has received favorable responses from two more of the Central and South American countries which are invited to open negotiations for the inauguration of parcels post communication with the United States. Half a dozen of these countries have officially signified their desire to enter into negotiations for an arrangement similar to that effected with Mexico, and which is now complete.

Wm. H. Gray, of the Glen Cove Machine Company, while visiting the machine shops in Albany last week, was stricken with apoplexy and died in a few hours. For a long time he was connected with the S. A. Woods Machine Company, and afterward went into the machinery business in the firm of Welch, Hutchinson & Gray.

A new phase of lake trade since the commencement of quick trips from Buffalo westward is the large package freight business. The merchandise is put in the cars at New York, and at Buffalo immediately placed on board vessels for Chicago. The time required to make the transfer from New York to Chicago in this way by rail and steamer is from four to five days, and the rates are lower than by all rail.

Cuban planters have been stimulated by high prices to engage in coffee culture more extensively than heretofore, and have already disposed of the crop at a handsome profit.

The scheme designed, among other objects, to supply the Eastern States with coal direct from Pennsylvania, via the Poughkeepsie Bridge, is being gradually carried into execution. The new railroad to be built in connection therewith is known as the Hartford, Connecticut and Western, of which Ex-Speaker Husted is to be president. This road, according to its projectors, will form connecting links with the New York Central, the Boston and Albany, the Harlem, the Pennsylvania, Jersey Central, Lehigh Valley, and all other railroads to be reached by the 270 miles of road constructed or laid out. The Poughkeepsie Bridge is being rapidly pushed; the Union Bridge Company have received more than one-half

the sum which they are to have for the construction of the bridge, and the bridge will be completed as soon, or perhaps sooner, than the road will be. It is now understood that the Storm King Bridge scheme has become merged in the Poughkeepsie bridge, under Mr. Husted's management.

Under the new New York law factory inspectors have the power to order the erection of fire escapes in factories, and to see that the provisions of the amended law of 1886 are carried out, which prohibit the employment of children under the age of 13 years in manufacturing establishments, and make 60 hours the limit of a week's work for all women under 21 years of age and boys under 18; besides requiring the guarding of gearing, shafting and belting; prohibiting women and minors from cleaning machinery in motion; requiring automatic contrivances to protect elevator ways, and authorizing the inspectors to order trap doors over hoistways and wellholes, corrugated rubber strips on stairways where necessary, and the closing in of stairways at the bottom and sides where women are working.

The New York and Mobile Steamship Company, who have been organized to do a general navigation and transportation business between this city and Mobile, Ala., stopping at intermediate ports, have filed their certificate of incorporation.

The Board of Street Openings in this city are much exercised on the subject of connecting the Blackwell's Island bridge with the railroad tracks on Fourth avenue, as a number of important thoroughfares must be encroached upon in forming curves at the various crossings, and the plan to be adopted deeply concerns the owners of private property.

English cotton manufacturers in the African trade find themselves subject to severe competition from cotton goods made in Bombay, and fears are expressed that before long China will not only supply her own demands with a home product, but the entire East, the raw cotton coming from fields in Southern China. Remarkable changes seem to be impending in the trade of the Orient.

New Orleans is about to have an opposition cottonseed oil mill at Gretna, one of the largest in the South. It will consume from 80,000 to 100,000 tons of seed per year, and it proposes to give fair prices to the planter and also to steamboats for transportation.

At Alexandria, Va., on lands originally set off for the Arrow Steamship Company, another concern, known as the Norton Shipbuilding and Construction Company, are actively established and have three vessels in course of construction.

The vicissitudes attending railway enterprise in China are illustrated by a recent occurrence referred to in a Pekin dispatch of May 25. "The railway which was set up last fall in Tientsin, and heralded to the world as the first railroad in China, has been brought to Pekin with the hope that the Emperor would buy it for use in the palace grounds, but so far he has not done so. It is reported here that Li offered 4000 taels for it, and, upon the owner's refusal to take what he considered less than half its worth, ordered one from the French syndicate, which controls more money than the Decauville people, and it is said, has also loaned the Chinese 600,000 francs, with the understanding that the sum may be repaid by the award of contracts. This fairly illustrates the way in which business is done in all Oriental countries."

To the thrifty Chinese iron and steel are precious metals. A little bit of iron with an edge of steel welded on is forged into a knife or tool which, however uncouth in appearance, certainly answers the purpose for which it was intended. Unable to pay the prices at which British manufacturers can supply tools, the Chinese import such iron as they cannot supply from their own mines, and they make their own tools. Thus in 1886 4,250,000 pounds of railroad iron was imported and used for bolts, for building purposes and for making tools, the latter being principally for the iron producing districts. Bar iron for building purposes was imported to the extent of 500,000 pounds, and about the same quantity of wire was taken to be made up into various articles. But old iron is one of the most popular of the metal imports. It is cheap, and can be hammered into fairly serviceable tools. Last year over 5,000,000 pounds weight of old horse shoes, worn out parts of machinery, old bars and plates, bits of broken up ships, &c., were taken by the Chinese and made into hoes, rakes, scythes, plow-shares, spades, and tools of various descriptions. The import of steel was not quite 500,000 pounds. It is too costly to be used recklessly, and is, therefore, sparingly added to the native iron as a strengthening tonic, and it supplies the edges for knives, files, and saws.

Superintendent Lawler, of the Reading Railroad, has issued a notice to all employees of the Schuylkill Division that they must abstain from intoxicants, whether on duty or not. Any man reported to him as having been seen taking a drink of liquor or beer will be summarily dismissed from the service of the company. He says in his order that there is no business that needs level headed men more than railroading, both for the safety of employees and the traveling public.



# The Iron Age

AND METALLURGICAL REVIEW.

New York, Thursday, July 14, 1887.

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S. B. LOWE, Manager.

## The Stipulations in Railroad Bills of Lading.

In the early history of transportation, shipments were made under cover of the general law, and without special conditions on the part of either merchant or carrier. Later on, the railroads thought that justice to themselves demanded a specified release from such damages as resulted from causes beyond their control, and for which they should not be held responsible. The common law upheld them in this idea, for it expressly exempted them from liability for loss occasioned by the act of God or the public enemy. It was found possible to embody these exemptions in the form of a contract between shipper and carrier, which should be held legal by the courts. By gradual steps what was at first a mere statement of the common law exemptions grew into the modern contract called a bill of lading, which releases the carriers from responsibilities not contemplated in the old laws, but which now, as at first, the courts hold to be binding between the parties in interest.

The essence of a contract is that the parties shall be free to enter into it or not. Under our present system the merchant is not free to accept or decline the conditions imposed by the railway company. He is not even allowed to take out a simple receipt, and so stand upon his common law rights; for before signing his receipt the railway agent will stamp upon it the words "subject to all the conditions of the company's bills of lading." To exchange that receipt for a bill of lading, therefore, imposes upon him no new conditions; his transportation rights are determined for him without his consent, and he is helpless. It is true a contract should show the signatures of both parties, and in this respect a bill of lading is faulty as a legal document, nevertheless it bears a clause that "the acceptance of this bill of lading is an agreement on the part of the shipper, owner and consignee of the goods to abide by all its stipulations, exceptions and conditions as fully as if they were all signed," and decisions have shown that a written acceptance by the merchant is not generally necessary to the validity of the document.

We have said that by the common law the carrier was from the first exempted from liability for certain losses. So far as the modern bill of lading follows that law, there is little cause for complaint. To release the railway from responsibility for natural decay of fruit where no unusual delay is shown, for example, is proper and right, but other conditions are open to objection. "Not liable for loss or damage by fire or other casualty while in transit or while in depots or places of transshipment," is a stipulation which, if taken literally, would make railroading a safe business. Under this sweeping clause a carrier is legally responsible for nothing. "No claim will be allowed for damage on packages if receipted for in good order at delivery" must have been put in to frighten people, as nothing is better settled in law than the fact that proofs will always overthrow receipts—these may be signed hastily by ignorant teamsters, and are valuable only as *prima facie* evidence. "Said carrier shall have the benefit of any insurance effected by the owner." As an offset to this attempt on the part of carriers to avoid payment for losses, the insurance companies now insert a clause in policies to the effect that all claims for loss by fire shall be transferred to them. As the merchant cannot assign such claim to both railroad and insurance companies, and as neither can be compelled to pay where there is an assignment stipulated to the other, the merchant, by the mere act of insuring his property, may be unable to collect his loss from anybody. It is further stipulated that in case of any loss that company alone shall be held answerable in whose custody the property may be. Good railroads do not stand upon this clause, but try to collect losses for owner from distant connections. It is a question whether the naming of a through rate does not weaken the force of this condition, but, at any rate, it would seem fair to modify it as far as justice will allow, since the initial road can collect better than can the shipper. The bills of lading guarantee a through rate, but the collection of charges over and above the agreed rate from consignee constitutes a standing grievance with all who have dealings with transportation lines. Before the property—sorely needed, perhaps—can be obtained the whole amount demanded by the delivery office must be paid, no matter how much the excess may be. This excess must then be collected as an ordinary claim, and is usually paid only after a tedious delay and much correspondence. This should not be so. The rate guaranteed by one railroad should be honored by its delivering connection on presentation of the bill of lading without any haggling. The excuse that the last railroad did not make the error is not a good one. It is a partner of the guaranteeing company, and is in far better position to adjust the mistake than any merchant can possibly be. Were this long-neglected guarantee of the rate once more fully carried out there would not be so many mistakes made. In Texas the acceptance of the bill of lading rate is obligatory upon the railroads.

The whole system of payments of overcharges and losses is, on many even of our good roads, in a shape far from satisfactory. There are not wanting merchants who allege that this department is purposely kept behind in order that such money may be applied to expenses and dividends. Whether true or not, it is but right that money which belongs solely to creditors should be promptly paid them. "Pay your debts" applies to railroads as well as to individuals, and while the complications may in some cases demand longer time, the majority of the claims should be settled within 30 or 60 days. While it is true that in actual practice the most of our railways pay for losses and damages without insisting literally upon the stipulations of the bills of lading, still the stipulations and conditions continue to be inserted. If meaningless, they should be removed; if they may be put at any time in force, they should have our careful attention. The passage of a law regulating commerce marks an advance in transportation history. It means that transportation companies shall no longer be allowed to dictate the terms of a forced contract, but that such stipulations and conditions must hereafter be based upon the common law rights of both carrier and shipper. Fairness to both is necessary to harmony.

A crisis in the affairs of the Panama Canal is rapidly approaching. Of late well authenticated reports of the woeful condition of the works have followed one another in rapid succession, leaving little doubt in the minds of unprejudiced lookers on that the great undertaking will certainly not be finished by those who first put their money into it. The huge task was underrated in the beginning, and it is even now a grave question whether it is at all possible to cut the canal and keep it open for any length of time after it has been completed. So much is reasonably certain that it cannot be carried through within the specified time, and at a cost which would allow of reasonable returns to investment on the basis of tolls low enough to command a fair share of traffic. Financially, it is a failure now, and that is the question of greater interest at the present time. The credit of the company is fearfully low, so that the latest scheme, a lottery loan of 500,000 new shares, payable in 45 years, at 1000 francs a share, is to be issued at 440 francs, or a discount of 57½ per cent. The

money is to draw 6 per cent. interest. If the shares are taken they will yield about \$40,000,000, while the obligation will be increased to close on ten times that amount, and the annual charges for interest and general expenses will run up close to \$20,000,000. It is true that the company claims to have \$20,000,000 of available funds now, and that M. de Lesseps is as sanguine as ever. But it remains to be seen whether investors in France will continue deaf to the many warnings they have received. It is only a question of time when the results of unparalleled waste, extravagance and engineering incapacity will become clear to the staunchest friends of the great promoter. Every day's delay will simply add violence to the storm which will shake French finances terribly, and it is needless to say that the business community all over the world will feel the effects of the fearful impending crash.

## The Demand for Charcoal Pig Iron.

Much interest has been excited in the West over a circular relative to the outlook for charcoal pig iron, which has been issued by the well known Cincinnati firm of Rogers, Brown & Co. In this circular these gentlemen state that according to the monthly reports of the Western Pig Iron Association the total stocks on hand at all the charcoal furnaces reporting to the secretary had decreased 72,688 tons during the 12 months ended June 1, or at the rate of over 6000 tons per month. That is to say, not only had all the charcoal pig iron produced during the year been consumed, but 6000 tons per month in addition had to be taken from furnace stocks in order to satisfy the demand for this kind of iron.

As this large consumption is still in progress, the inquiry is suggested, What provision has been made for meeting it? The circular in question answers: "Practically none. Nor can there be, owing to various causes, for a year or two at least." All the charcoal furnaces that can be profitably put in operation are now running, especially in the Lake Superior charcoal pig iron region. The furnaces there which are now standing idle are either in very bad condition, and would cost too much to put them in good order, or else they are badly situated to receive supplies of fuel or high grade ores. Under these circumstances the circular claims that one of two alternatives must result before the end of the current year—either the use of charcoal pig iron by car-wheel works, malleable works, agricultural works, boiler works, &c., must be heavily curtailed, or we must inevitably see a scarcity of car-wheel, malleable and foundry pig iron of charcoal make that will cause a radical change in the market for this class of metal.

As Lake Superior charcoal pig iron is very extensively handled in the Chicago market, this is a question of more than ordinary importance to the iron trade of that section of the Northwest. The conclusion of Rogers, Brown & Co. are borne out by the principal dealers in pig iron in that locality. They assert that the demand for charcoal pig iron by the regular trade will be larger than ever during the coming year, while contracts already made with other parties who are not regular consumers will reduce the quantity available. It is well known that some of the Western Bessemer steel works early in the year contracted for some heavy quantities of charcoal iron, a number of furnaces being exclusively engaged in filling them.

The natural result of such a condition of trade must be higher prices for the product which is so greatly in demand. This seems to be expected now on all sides, and the only difference of opinion exists as to the extent of the advance. Some are doubtless over sanguine who believe that \$30 will be touched. Unless the price of coke iron advances in a corresponding degree, a very high price for charcoal iron cannot be sustained. Coke iron will be substituted wherever possible. It may not answer for malleable castings, and probably some car-wheel works would hesitate about using it, but coke iron would certainly be used under such circumstances much more extensively than now by many manufacturers who at present believe themselves almost unable to get along without using Lake Superior charcoal pig iron for the bulk of their work. The limit of the upward movement in prices, in the absence of any disturbing element, would then seem to be the figure at which substitutes for charcoal pig iron would be sought for, and that is something to be ascertained by experience. On such a point opinions are worth but little.

A recent demand for an allowance upon bar iron which had failed to come up to a railroad company's prescribed test revealed to a Western rolling mill owner a curious instance of the number of profits which may accrue to the person handling the iron from the time it leaves the mill until it reaches the consumer's hands. In this case an agent of the mill made the sale to a broker, who was acting for a jobber. The jobber sold the iron to a retailer in a city containing the repair shops of a railroad company. The purchasing agent of the railroad company gave an order for bar iron to the retailer, and included in the iron furnished was that which gave way under the test and caused the claim for an allowance. The iron thus passed through five hands between the mill and the consumer, and of these at least

three received a profit for their interest in the transaction. This would not be a complete story if we did not add that the claim for an allowance was rejected by the mill, because the iron had been sold as common iron and paid for accordingly, without any guarantee as to quality, and the loss properly fell on the retailer, who took his chances of its passing the rigid inspection of the officials of a very large railroad system.

## Our Trade with Hawaii.

The peaceful revolution which took place at Honolulu toward the close of June ending in the fall of the cabinet, of which Mr. W. M. Gibson was the Premier, and the accession to power of a cabinet headed by Mr. W. L. Greene, invites attention to the affairs of the Sandwich Islands, whose trade is pretty much monopolized by the United States since the reciprocity treaty became operative in 1876. Mr. Gibson and consorts were, it appears, accused of mismanagement and corruption, and the King, a weak man, was not wholly exempt from blame. Whether this event will promote or upset the recently entertained project of a South Sea confederation, it is too early to judge. At any rate, the reciprocity treaty alluded to has produced such important commercial results by expanding our trade with the Hawaiian Islands, that the projected confederation between them, Samoa and the Tonga Islands, should the scheme be carried out, would be a matter of no small interest to the American people. The reciprocity treaty of September 9, 1876, was concluded for seven years, and continues until after 12 months' notice of termination by either of the contracting powers. The treaty remitted the duties on the chief products of either country in the ports of the other.

The eight islands composing the Hawaiian group cover an area of 16,936 square kilometers, which are inhabited by 80,578 people, of whom only 40,014 are native Kanakas, 17,939 Chinese, and 17,335 Europeans and Americans, the latter numbering 2066. The excess of immigrants over emigrants in 1884 was 2713. The capital is Honolulu, with a population of 20,487. In 1886 the public indebtedness did not exceed \$1,065,600. The income during the two fiscal years 1885-86 taken together was \$3,298,496, and the outlay \$3,291,541. The budget for 1887-88 fixed the revenue at \$2,839,925, and the expenses at \$2,830,810. Some 32 miles of railway are in operation; 40 miles of telegraph since 1878, and 190 miles of telephone. In 1885 the post office handled \$61,041 international and 1,101,370 domestic letters. The merchant marine consisted in 1885 of 51 vessels of a joint tonnage of 9250, 13 being steamers.

## Commerce and Navigation.

Calendar year.	Values in thousands of dollars.				Vessels entered.	
	Import.	Total.	Of which domestic produce.	Customs receipts.	Number.	Tonnage.
1885.....	\$3,881	\$9,069	\$8,930	\$508	253	190,198
1884.....	4,628	8,185	8,068	552	241	187,826
1883.....	5,024	8,183	8,036	577	267	185,313
1882.....	4,975	8,239	8,156	505	248	172,619

## Chief Products Exported.

Calendar year.	Thousands of pounds.					
	Sugar.	Rice.	Coffee.	Tallow.	Bananas.	Hides and Skins.
1886.....	171,350	7,367	2	57	475	60,046
1885.....	142,655	9,535	4	3	408	58,040
1884.....	114,197	12,968	16	34	918	44,900
1883.....	3,006	111	146	248	40	68,587

## American Trade.

Fiscal Year.	Import. Export to Hawaii.	
	Value.	Value.
1879.....	\$1,154,348	\$724,307
1878.....	2,277,354	1,109,429
1877.....	2,625,354	1,083,146
1876.....	3,112,438	2,388,178
1875.....	4,464,463	1,955,506
1874.....	5,378,077	2,604,283
1873.....	7,475,453	3,274,172
1872.....	8,029,848	3,683,460
1871.....	7,690,216	3,446,024
1870.....	8,611,386	2,709,573
1869.....	8,805,707	3,115,899
Total.....	\$60,517,094	\$36,712,537

## Import of Hawaiian Sugar into the United States.

Fiscal Year.	Pounds.	
	1877.	1886.
1877.....	30,642,081	106,181,858
1878.....	30,368,828	114,132,670
1879.....	41,663,069	125,148,680
1880.....	61,556,324	139,632,783
1881.....	78,909,207	194,623,169
Total.....	241,169,009	706,739,160

The increase in five years was 465,570,151 pounds, or 193 per cent. During the first eleven months of the fiscal year 1887 the imports of Hawaiian sugar were 186,997,246 pounds. The sugar planters of the Hawaiian Islands have been driven by the existing sugar crisis not only to look for cheaper labor, but to study economies in production and new processes of manufacture. The diffusion process, which has been lately introduced, is said to save 10 per cent. more sugar than the old method. There is estimated to be soil enough in the kingdom to yield, under favorable circumstances, an annual product of over 100,000 tons. The virgin soil has been cropped so far without renewal by fertilizers.

The Planters' Labor and Supply Company petitioned the Government in 1883 for permission to land a sufficient number of Chinese

laborers to relieve the stringency in the labor market. About six months after the request was granted the Pacific Mail Steamship Company began to land Chinese coolies at the rate of 1000 a month. The Government, the people, and the planters themselves became alarmed at this influx. Foreign powers pressed the Government to arrest it, and consequently the permission was suspended. The Government then negotiated with the Japanese Government for a supply of 600 Japanese agricultural laborers a month during the year 1885. The planters, after the suspension of Chinese immigration, again petitioned the Government to allow 2000 more to be imported as soon as possible, asserting that they could not afford to pay the current rate of wages with the low prices ruling in the sugar market. The Government refused this request. The Chinese immigrants were acknowledged to be as good as could be obtained. The objections raised against them were that they maintained a system of guilds by which they were able to control the price of labor, that they corrupted the native women, and that their shrewdness and thrift enabled them to wrest from the natives their lands and other property, as has been the experience in the sugar regions of Java. Most of the business formerly done by native Hawaiians has already passed into the hands of Chinamen, and the European traders and planters began to fear the result of unrestricted Chinese competition. The Legislature voted \$300,000 to assist immigration generally. The Japanese laborers contract for three years, receiving their passage from Japan free, their wages being \$10 a month, with board and lodging. Another class of immigrants lately procured in great numbers are Portuguese laborers from the island of Madeira, as desirable as the Japanese.

The following table shows the imports of iron and steel for the first five months of the calendar years, 1885, 1886 and 1887.

Imports of Iron and Steel for the First Five Months.

	1885.	1886.	1887.
	Gross tons.	Gross tons.	Gross tons.
Iron ore.....	515,894	421,437	143,517
Pig iron.....	165,098	145,140	56,591
Scrap iron.....	172,108	35,130	5,834
Bar iron.....	15,517	2,038	998
Steel rails.....	11,121	9,360	7,150
Steel ties.....	37,728	9,219	1,632
Cotton ties.....	5,028	241	2,659
Steel hoops, bands, strips, sheets and plates.....	9,301	882	525
Steel ingots, blooms, slabs, billets and bars.....	141,258	36,321	8,869
Sheet, plate and taggers.....	2,191	1,798	712
Iron.....	119,158	119,361	60,683
Tin plates.....	65,857	73,593	34,384
Wire rods.....	503	1,329	657
Wire and wire rope.....	612	437	213
Anvils.....	289	238	206
Chains.....			

The most alarming increase has taken place in steel in its different forms, principal in the list being blooms, billets and slabs, which we have brought in at the rate of over 40,000 tons a month, assuming that the balance is largely crucible steel bars, ingots, &c. In steel plates there has been a large increase. A part of the imports of steel rails may be merely in transit to Mexico or Canada. The rush of old material is now about over, but there seems some danger of a revival of importations of this class of material.

It would appear from recent investigations at Chicago that the limit has been reached in the construction of larger vessels for the lake trade. Doubt having arisen as to the practicability of securing an entrance to Chicago docks for one of the large boats recently launched in Cleveland, her owners ascertained by actual measurements that she was too large to be easily handled in the Chicago River or loaded or unloaded at the Chicago docks. It is understood that they have ordered other boats, now under construction, to be made smaller, and will put the large boat on a route between two points possessing the requisite accommodations. Builders of vessels for lake service have of late proceeded on the assumption that the larger the boat the more economically could she carry freight, and they designed lake vessels as large as if they had been intended for ocean service. They now know definitely that a limit exists if a vessel is intended for general service, although a larger craft than any yet built might be used on certain routes, if it would be deemed good policy to build for such special work.

The manufacturers of soft steel report an increasing trade in sizes competing with merchant bar iron. The demand is of a character that could only be supplied by the best double worked iron if soft steel were out of the way. Specifications of a most exacting character are being filled with ease and at a very reasonable price by the soft steel manufacturers. The calls for such material are now of such frequency and magnitude that some of the principal makers are discussing the question of carrying a regular warehouse stock in the same way that bar iron and hard steel are carried. Should this be done on a scale of some consequence the sale of bar iron would undoubtedly be affected, at first locally and afterward quite generally. It is quite possible that the Western puddlers made a mistake when they advanced the cost of manufacturing muck bar by insisting upon higher wages for puddling. They have laughed at those who prophesied their extinction years ago, but the chances now are that before another 12 months roll round some important steps may be taken in that direction.



## Six Months of Pig Iron Production.

From very full reports from individual furnaces, we are in a position to put forward the following estimate of the production of pig iron in the first six months of the current year. The information required to compile these figures is declined in only a few isolated instances, and being more complete in some districts than our monthly returns, is chiefly interesting as confirming fully the estimates given regularly. We have included below in the anthracite product the coke iron made in New York, chiefly for the reason that it is the make of one concern only.

Production of Anthracite Pig Iron, Gross Tons.	First half 1886.		Second half 1886.		First half 1887.	
	1886.	1886.	1886.	1886.	1887.	1887.
New York.....	90,845	95,104	114,801			
New Jersey.....	70,457	70,353	96,429			
Pennsylvania.....						
Lehigh Valley.....	286,221	318,369	351,031			
Schuylkill Valley.....	153,391	198,118	190,623			
Upper Susquehanna.....	75,506	65,072	81,116			
Lower Susquehanna.....	2,784	23,618	225,638			
Maryland.....		10,372	7,355			
Total.....	903,354	971,285	1,065,111			

It will be observed that there has been an increase during the first six months of the current year of close on 100,000 tons, while the make is about 160,000 larger than it was during the corresponding period of 1886.

## Production of Bituminous and Coke Pig in 1886.

Gross tons.	First half 1886.		Second half 1886.		First half 1887.	
	1886.	1886.	1886.	1886.	1887.	1887.
Pennsylvania.....						
Allegheny County.....	294,762	308,360	344,111			
Shenando Valley.....	169,399	188,870	170,174			
Miscellaneous.....	203,143	187,484	300,332			
Marland.....	6,862	3,571	3,500			
Virginia.....	61,314	72,776	72,199			
Georgia.....	19,848	21,357	21,575			
Alabama.....	96,807	83,266	102,148			
Tennessee.....	74,718	78,643	90,761			
West Virginia.....	44,600	42,452	32,610			
Kentucky.....	16,088	27,198	22,516			
Ohio.....						
Mahoning Valley.....	159,845	152,814	154,370			
Hocking Valley.....	27,074	24,593	35,827			
Hanging Rock.....	45,180	58,747	50,549			
Miscellaneous.....	149,284	178,833	156,449			
Indiana.....	6,797	5,079	8,271			
Illinois.....	174,069	273,362	231,116			
Wisconsin.....	15,168	18,365	28,691			
Missouri.....	30,607	27,916	41,336			
Colorado.....		9,331	12,998			
Total.....	1,558,591	1,839,833	1,779,594			

The falling off during the first half of 1887, as compared with the second half of 1886, is due entirely to the coke strike, and it is not too much to say that had it not taken place the make would have shown a striking increase. The effect of the strike is readily traced in the Pittsburgh district, in the Shenando Valley, in Ohio and in Illinois. Although it is now apparently rapidly approaching an end, there is little doubt that the July make, too, must be light.

We estimate the output of the charcoal furnaces at 221,561 gross tons, which includes 31,606 gross tons for New England, New York and Pennsylvania; 663 tons for Ohio, 77,708 tons for Michigan, 19,906 tons for Wisconsin, 15,343 tons for Missouri, 13,412 tons for Tennessee, and 47,612 tons for Alabama. The total product of pig iron then stands as follows:

First half 1886.	Second half 1886.		First half 1887.	
	1886.	1886.	1887.	1887.
Anthracite.....	903,354	971,285	1,065,111	
Bituminous and coke.....	1,558,591	1,839,833	1,779,594	
Charcoal.....	173,697	234,642	221,561	
Total.....	2,635,642	3,045,760	3,066,266	

In detail the status of the anthracite furnaces was as follows on July 1:

Anthracite Furnaces in Blast July 1.					
Location of furnaces.	Total number of furnaces.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	29	26	4,399	3	3,690
New Jersey.....	15	15	3,073	0	2,106
Pennsylvania.....					
Lehigh Valley.....	48	40	12,425	8	2,445
Schuylkill Valley.....	42	37	10,400	5	1,910
Upper Susquehanna.....	23	17	4,613	6	1,115
Lower Susquehanna.....	1	0	0	1	285
Lebanon Valley.....	15	13	5,171	2	750
U. Susquehanna.....	18	11	2,970	7	1,030
Maryland.....	4	2	580	2	163
Total.....	197	138	40,742	60	13,396

When it is taken into consideration that the two Troy furnaces and the Chester have been transferred to the coke furnace table, it will be observed that July was entered with smaller capacity than June, as the following figures show, after modifying last month's totals by deducting these works. This decline is due partly to the operation of the coke strike and partly to the fact that some large furnaces are temporarily out.

In New York no canones of any consequence have taken place. Kirkland furnace, which blew out some time since, is expected to go in about the 20th inst. Until now we have placed the new Troy furnaces in the list of anthracite producers, but as they use coke exclusively they more properly belong under that category. In New Jersey Musconetcong furnace is out and is not likely to resume before September. At the date of our report two Andover furnaces were still in. Since then they have stopped, which means a further reduction of about 550 gross tons per week. In the Lehigh Valley, one of the Bethlehem fur-

naces; one of the Thomas stacks, and the Lucy, of the same company, went out during June, reducing the current make by nearly 1000 tons a week. At the suggestion of gentlemen prominently identified with the iron industry of the Lehigh Valley we have segregated the following furnaces, which have hitherto been grouped as follows: Robeson, two Sheridan, with the Schuylkill Valley furnaces, and Bird Coleman, two Colbrook, two Cornwall, two North Cornwall, Donaghmore, Lebanon, two Lebanon Valley and Swatara, formerly counted with Lower Susquehanna furnaces. All but one of these furnaces use Cornwall ore exclusively, and they naturally form a group, the output of which in the first six months of 1887 we estimate at 150,423 gross tons. We have also taken from the list of Schuylkill Valley furnaces the Chester, which uses coke exclusively, adding it to "miscellaneous Pennsylvania coke furnaces."

The position of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast July 1, 1887.					
Location of furnaces.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.
New England.....	14	8	636	6	416
New York.....	10	4	228	6	495
Pennsylvania.....	23	4	449	19	637
Maryland.....	13	3	407	10	613
Virginia.....	24	1	75	23	1,018
West Virginia.....	3	0	0	3	165
Ohio.....	17	7	645	10	545
Kentucky.....	3	1	107	2	214
North Carolina.....	2	1	92	1	90
Tennessee.....	9	2	565	7	784
Georgia.....	2	0	0	2	145
Alabama.....	10	8	1,774	2	162
Michigan.....	25	12	1,124	13	2,905
Minnesota.....	1	0	0	1	230
Missouri.....	4	2	680	2	398
Wisconsin.....	9	3	813	6	380
California.....	1	0	0	1	245
Washington Ter.....	1	0	0	1	175
Oregon.....	1	0	0	1	100
Total, July 1.....	174	56	10,088	118	10,322
June 1.....	53	10,528	121	10,847	

There have been no changes of any moment in New England or New York. In Pennsylvania Greenwood is repairing, and Pine Grove, which was idle on the 1st, is probably at work now, having accumulated charcoal enough to keep in operation for 10 months. In Michigan one of the Eureka furnaces is again at work, and the Gaylord has resumed.

The status of the bituminous and coke furnaces on the 1st of July was as follows:

Bituminous and Coke Furnaces in Blast July 1, 1887.					
Location of furnaces.	Total number of furnaces.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	3	2	954	1	500
Pennsylvania.....					
Pittsburgh district.....	19	10	11,750	9	4,895
Shenando Valley.....	1	0	0	1	450
Junata & Conemaugh.....	22	11	3,238	11	5,746
Spiegel.....	1	0	0	1	0
Young Valley.....	3	2	814	1	1,261
Ohio.....					
Mahoning Valley.....	15	3	475	12	842
Hocking Valley.....	15	3	1,408	12	7,486
Hanging Rock.....	13	1	1,964	12	1,488
Miscellaneous.....	15	6	2,778	9	6,510
Indiana.....	16	8	7,933	8	6,300
Missouri.....	8	2	840	6	2,530
Wisconsin.....	8	2	835	6	3,079
Michigan.....	1	0	0	1	290
Tennessee.....	12	7	2,925	5	1,435
Georgia.....	9	9	3,775	0	0
Alabama.....	1	1	984	0	0
Colorado.....	1	1	495	0	0
Total.....	207	98	47,319	109	52,289

As compared with previous months these figures stand:

Date.	No. of furnaces.	Capacity per week.
July 1.....	98	47,319
June 1.....	98	44,965
May 1.....	148	81,799
April 1.....	146	79,032
March 1.....	145	79,257
February 1.....	137	73,422
January 1, 1887.....	139	73,738
December 1, 1886.....	140	73,013
November 1.....	136	70,802
October 1.....	135	69,206
September 1.....	133	68,632
August 1.....	132	71,316
July 1.....	129	70,766
June 1.....	129	67,828
May 1.....	129	67,828

In the Pittsburgh district all of the Edgar Thomson furnaces are now in blast with the exception of "E," which is out for relining and will go in about August 10. Furnace "A" went in on July 6. All three of the Eliza stacks are in operation, Messrs Laughlin & Co. having their own coke ovens, so that the strike has not interfered with their work. Both of the Lucy furnaces are producing. Carrie was blown out on May 11 for relining and making repairs, and will be ready to resume on about the 25th inst. Clinton, Edith, the Isabella furnaces, the Schoenberger furnaces and Bobo are all banked. In the Shenando Valley the only plants in operation are the Eliza, Sharon and the two Stewart, which together made 7000 tons in June. In the Juniata and Conemaugh Valleys five out of six of the Cambria Company's stacks, at Johnstown, are banked, thus very heavily reducing the current make. Chester, among the miscellaneous furnaces, is out.

In Virginia the Lynchburg furnace went out on the 13th ult., to reline the bosh, but is expected to be in blast again on the 15th of this month. Low Moor is still out of blast, and Crozer made little iron in June. In West Virginia the Top Little furnace is

still banked, and Riverside, too, is idle on account of the coke strike. Irondale was banked for 18 days during June, so that it did not make its usual output. Belmont, which is out, has been remodeled, and Gordon, Strobel & Laureu have put in their hot-blast stoves. In the Mahoning Valley Hinrod and Parnis alone reported being in blast during the month of June, and Falcin blew in on the 1st of the month. In central, northern and eastern Ohio, including the furnaces grouped under "miscellaneous," it should be noted that one of the Cherry Valley furnaces had to be banked on account of the coke strike. In Illinois the furnaces at South Chicago are again all running, No. 7 blowing in on the 19th. The Union furnaces are still idle. In Missouri one of the three stacks of the Western Steel Company went out on the 26th ult.

## The Changes in the Trunk Line Classification.

The Joint Committee has issued a new classification superseding that which went into effect on the 1st of April, the new list to govern from the 15th of July. In the issues of *The Iron Age* of March 24 and March 31 we published the first classification, and referring to it we give below those articles on which a change has taken place. The rules and special instructions have been amended as follows:

3 [A] The minimum carload weight upon all property in first, second and third classes shall be 20,000 pounds, unless otherwise specified in the classification. In order to entitle a shipment to the carload rate a quantity not less than the minimum carload weight must be delivered at one station, in one day, by one shipper, consigned to one consignee and destination, and only one bill of lading shall be issued for any such carload shipment.

6 [B]. Owners will be required to load and unload bulk freight in carloads, unless otherwise provided by special agreement.

16 [B]. Articles on which prepayment is required may, on the approval of the General Freight Department of the road on which the freight originates, be forwarded on the guarantee of the shipper that freight and charges will be paid at destination.

## CLASSIFICATION.

Explanation of characters.—The class is given opposite each article. 1, 2, 3, 4, 5 and 6 stand for first, second, third, fourth, fifth and sixth classes respectively. Sp for special. 1½ for once and a half first class. D for double first-class. 2½ for twice and a half first-class. 3 for three times first-class. 4 for four times first-class. OR for owner's risk. ORB for owner's risk of breakage. ORC for owner's risk of chafing. ORL for owner's risk of leakage. CR for carrier's risk. SU for set up. KD for knocked down. CL for carload. LCL for less than carload. PP for prepaid. NOS for not otherwise specified. Articles not enumerated will be classed with analogous articles.

The first column is for less than carload; the second for carload lots.

Agate ware, bxd. OR..... 2 4

## Agricultural Implements.

One thrasher or separator, corn sheller, SU, with or without horse-power, requiring flat car, minimum weight 500 lbs. 1 4  
One thrasher, separator, corn sheller, SU, with steam power, minimum weight 30,000 lbs. 1 4  
Two threshers or separators, corn sheller, with or without horse-power, requiring flat car, minimum weight 20,000 lbs. 1 4  
Thrasher, separator, corn sheller, loaded in box cars, actual weight 1 4  
Asbestos packing and roofing, in rolls or cs. 4 5  
Bags, gunny, paper, or cloth, OR. 4 5  
Balls, glass, sportsman's, in bbls or bxs. OR. 4 5  
Barb wire, OR, wet and rust. 4 5  
Baskets, nested, in bbls. 1 4  
Baskets, over handle, in bbls. or with ends. 1 4  
Belt, in bbls, OR, or bxd. 3 4  
Binding twine or cord for harvesters, in bales. OR. 3 4  
Binding wire or wire ties, OR wet and rust. 4 5  
Boards, pulpit, or table, OR. 4 5  
Blue vitriol, in bbls. 4 5  
Boilers, under 10 feet in length, loaded in box cars. 2 5  
Brimstone, in bbls or hds. 4 5  
Broom handles, when loaded with broom corn. 4 5  
Buckets, galvanized iron, nested in bbls. or racks. 1 5  
Buckets, wooden or indurated fiber, nested in bbls. or racks. 1 5  
Cans, empty, NOS, in chests, OR. 1 5  
Car wheels, paper or iron, loose or attached to axles. 4 5  
Cement, fruit can or jar. 4 5  
Chairs, camp, theater, in bbls. 4 5  
Chalk or chalk crayons in pkgs. 4 5  
Charcoal, in bbls, OR, or bxd. 4 5  
Chickens, minimum weight, 20,000 lbs. 4 5  
Cider mills, hopper, wheel and parts taken off and packed in the tubs, OR, CL, Rule 3B. 3 5  
Clay pigeons, in bxs, cks, or rolls. 4 5  
Cloth, wire, in bxs, cks, or rolls. 4 5  
Coal hods and scuttles, OR. 4 5  
Coppers, in bbls or cks. 4 5  
Copp. ore, in bbls or bxs. 4 5  
Cord, binding, for harvesters, in bales, OR. 4 5  
Cotton gins, taken apart and boxed. 4 5  
Cotton waste, pressed in bales. 4 5  
Crucibles, broken, OR. 4 5  
Diggers, post-hole. 4 5  
Electric storage batteries, wood or lead released. 2 4  
Engines, portable, see rule 3B. 4 5  
Engines, stationary, iron, loose or attached. 4 5  
Fence wire, OR, wet and rust. 4 5  
Fencing, combination, wire and wood. 4 5  
Fire proofing. 4 5  
Flint and lead, bxd. 4 5  
Hearths, iron, marble, slate or stone, boxed. 4 5  
Kegs, nail, empty, min. weight 20,000 lbs. 4 5  
Kettles and cauldrons, copper or brass, OR released. 2 5  
Knives and cauldrons, OR, released. 3 5  
Knitting machines, SU, boxed or racked, OR. 1 5  
Knitting machines, KD boxed, OR. 1 5  
Knobs, NOS, in packages. 2 5  
Lampblack, carbon black and other sorts of black NOS, in bbls, OR, released. 1 5  
Land rollers, KD. 4 5  
Lanterns, OR, min. weight 20,000. 4 5  
Legs, sewing machine, OR, completely KD. 4 5  
Flat, coated or racked, OR, released. 2 4  
Ladders, stove, in bbls. or bxs. OR. 4 5  
Locks in pkgs. 2 5  
Locomotives, axles, wheels, tires. 4 5  
Locomotives, OR. 4 5  
Lumber, CL, see rule 3B. 4 5  
Mantels, marble, stone, slate or wood, boxed. 4 5

## Machinery.

Cotton gins, SU. 1 5  
Cotton gins, taken apart and bxd. 3 5  
Iron ore, rock or stone crushers. 4 5  
Machine, gas, NOS. 4 5

Machine, gas, flat cars, OR, minimum weight 4000 lbs. each. 1 5  
Machines, hoisting. 1 5  
Machine, gas, OR, min. weight 2000. 4 5  
Machines, nails OR. 3 5  
Machines, sewing, OR, released, minimum weight 20,000 lbs. 4 5  
Machines, tile, OR. 2 5  
Machines, washing, OR. 4 5  
Machines and machinery, NOS, boxed, or KD, in pieces, OR. 1 5  
Machinery, heavy, weighing 2 tons and over to each machine, not specially named otherwise, with connection and detachable parts removed and bxd, OR. 3 5  
Mills, cider, hop, r. wheel and parts taken off and packed in the tubs, OR, CL, see Rule 3B. 3 5  
Mills, coffee, drug or grocers', boxed. 2 5  
Marble or granite, all kinds, CR. 4 5  
Marble tiling, boxed, ORB. 4 5  
Marble tiling, RB. 4 5  
Material for moving houses, consisting of casings, chains, chains, jackscrews, p. leys, ropes, heavy timbers, wooden rollers, &c. 4 5  
Mats and rugs, grass, in bales. 3 5  
Mats and rugs, hemp. 3 5  
Mats, in bbls, wooden, OR, packed in bxs. 4 5  
Matting, cocoa, hemp, or pipe fiber. 2 5  
Meat choppers, KD and boxed. 2 5  
Meat safes, OR, released. 1 5  
Mineral pulp. 4 5  
Mouldings, wood, OR, composition, not plaster, common building. 3 5  
Mouldings, wood or composition, not plaster, finished and unfinished, boxed. 3 5  
Mouldings, wood or composition, not plaster, in bbls, OR. 3 5  
Nails, horseshoe or finishing, in bxs. 4 5  
Nails, in bags, OR, wet and rust. 3 5  
Nuts, iron, in bxs. or kgs. 4 5  
Oil cans, glass, empty, in tin or wood jackets, in bbls, OR, min. wt. 20,000 lbs. 4 5  
Oil cloth, floor, in bxs, under 13 ft. in length. 2 5  
Oil cloth, not bxd., under 13 ft. in length, OR. 2 5  
Oil cloth, OR, not bxd., 13 ft. or over in length, OR. 1 5  
Oil, in square cns. NOS, completely bxd. 2 5  
Oil, petroleum, mineral, benzine, benzole, kerosene, naphtha, camphine and burning fluid, in cans, glass, or bxs, packed in bxs, jackets or kgs., corked secured with wire, CR. 4 5  
Oil, petroleum, kerosene, carbon, mineral or coal, benzine, benzole, gasoline and naphtha, in wood, OR, released, see Special Tariff. 3 5  
Oil, petroleum, kerosene, carbon, mineral or coal, in tank cars, see Special Tariff. 4 5  
Ore, rock and stone crushers, iron. 4 5  
Ore, in bbls, bxs or sacks. 4 5  
Ore, anthracite, copper, lead or silver, value not to exceed \$100 per net ton, to be limited by written release. 6 5  
Manganese. 4 5  
Paints, NOS, dry or in oil, in bbls. 4 5  
Paper bags or sacks, in pkgs. OR. 4 5  
Paper pairs, small, for oysters, candy, &c., nested in bxs. or crates. 1 5  
Paper stock or waste, in bales, bags crates or sacks, not flat hemp or jute, see Rule 3B. 6 5  
Phosph. cement, or sewer, or drain tile, OR. 4 5  
Phosph. tile, in bbls or bags. 4 5  
Pipe, conductor, galvanized iron or tin, nested and crated. 1 5  
Pipe, stove, see Rule 3B. 1 5  
Piled goods or ware. 1 5  
Plumbago, in bbls. or cks. 4 5  
Pokers, stove, iron, NOS, in bbls. or boxed. 4 5  
Post hole diggers. 4 5  
Presses, cheese and lard, that can be loaded in box cars. 1 4  
Presses, cheese and lard, when flat car is required, minimum weight 4000 lbs. each. 1 4  
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Union Land Co., St. Paul, Minn.	34	Union Land Co., St. Paul, Minn.	34	Union Land Co., St. Paul, Minn.	34
Butcher and Shoe Knives, Manufactur- ers of		Butcher and Shoe Knives, Manufactur- ers of		Butcher and Shoe Knives, Manufactur- ers of	
Wilson John, Sheffield, England	36	Wilson John, Sheffield, England	36	Wilson John, Sheffield, England	36
Butes		Butes		Butes	
Sabin Machine Co., Montpelier, Vt.	32	Sabin Machine Co., Montpelier, Vt.	32	Sabin Machine Co., Montpelier, Vt.	32
Smith & Edge Mfg. Co., Bridgeport	41	Smith & Edge Mfg. Co., Bridgeport	41	Smith & Edge Mfg. Co., Bridgeport	41
Union Mfg. Co., 103 Chambers, N. Y.	7	Union Mfg. Co., 103 Chambers, N. Y.	7	Union Mfg. Co., 103 Chambers, N. Y.	7
Cutlery and Dicers		Cutlery and Dicers		Cutlery and Dicers	
Richardson J. A., Mass.	39	Richardson J. A., Mass.	39	Richardson J. A., Mass.	39
Can Makers' Tools and Machines		Can Makers' Tools and Machines		Can Makers' Tools and Machines	
Crosby J. A. & Co., Chicago	41	Crosby J. A. & Co., Chicago	41	Crosby J. A. & Co., Chicago	41
Norwalk Iron Works, Norwalk, Conn.	42	Norwalk Iron Works, Norwalk, Conn.	42	Norwalk Iron Works, Norwalk, Conn.	42
Can Openers		Can Openers		Can Openers	
Black & File Mfg. Co., West Chelmsford, Mass.	8	Black & File Mfg. Co., West Chelmsford, Mass.	8	Black & File Mfg. Co., West Chelmsford, Mass.	8
Car Axles		Car Axles		Car Axles	
Roberts A. & P. & Co., 265 S. 4th, Phila.	6	Roberts A. & P. & Co., 265 S. 4th, Phila.	6	Roberts A. & P. & Co., 265 S. 4th, Phila.	6
Whitney A. & Sons, Philadelphia	6	Whitney A. & Sons, Philadelphia	6	Whitney A. & Sons, Philadelphia	6
Carriage Hardware, Makers of		Carriage Hardware, Makers of		Carriage Hardware, Makers of	
E. D. Clapp Mfg. Co., Auburn, N. Y.	10	E. D. Clapp Mfg. Co., Auburn, N. Y.	10	E. D. Clapp Mfg. Co., Auburn, N. Y.	10
Smith H. D. & Co., Plainville, Conn.	12	Smith H. D. & Co., Plainville, Conn.	12	Smith H. D. & Co., Plainville, Conn.	12
Carriages		Carriages		Carriages	
Hutchinson Carriage Works, Syracuse	37	Hutchinson Carriage Works, Syracuse	37	Hutchinson Carriage Works, Syracuse	37
Castings, Iron		Castings, Iron		Castings, Iron	
S. Cheney & Son, Manlius, N. Y.	40	S. Cheney & Son, Manlius, N. Y.	40	S. Cheney & Son, Manlius, N. Y.	40
Baugh & Clark, Albany, N. Y.	40	Baugh & Clark, Albany, N. Y.	40	Baugh & Clark, Albany, N. Y.	40
Hammer & Co., Branford, Conn.	33	Hammer & Co., Branford, Conn.	33	Hammer & Co., Branford, Conn.	33
S. S. Spencer's Sons, Guilford, Conn.	41	S. S. Spencer's Sons, Guilford, Conn.	41	S. S. Spencer's Sons, Guilford, Conn.	41
New Hope Mfg. Co., Bridgeport, Conn.	40	New Hope Mfg. Co., Bridgeport, Conn.	40	New Hope Mfg. Co., Bridgeport, Conn.	40
North Brothers, Philadelphia, Pa.	40	North Brothers, Philadelphia, Pa.	40	North Brothers, Philadelphia, Pa.	40
Palmer & De Mott, Cleveland, O.	40	Palmer & De Mott, Cleveland, O.	40	Palmer & De Mott, Cleveland, O.	40
Springfield Iron Works, Springfield, Mass.	32	Springfield Iron Works, Springfield, Mass.	32	Springfield Iron Works, Springfield, Mass.	32
Taylor & Rayne, Iron Works, Syracuse, N. Y.	4	Taylor & Rayne, Iron Works, Syracuse, N. Y.	4	Taylor & Rayne, Iron Works, Syracuse, N. Y.	4
Wetherill Robt. & Co., Chester, Pa.	43	Wetherill Robt. & Co., Chester, Pa.	43	Wetherill Robt. & Co., Chester, Pa.	43
Castings, Steel		Castings, Steel		Castings, Steel	
Quaker Steel Casting Co., Philadelphia	37	Quaker Steel Casting Co., Philadelphia	37	Quaker Steel Casting Co., Philadelphia	37
Eureka Cast Steel Co., Chester, Pa.	44	Eureka Cast Steel Co., Chester, Pa.	44	Eureka Cast Steel Co., Chester, Pa.	44
Black Stanley & Co., Philadelphia	44	Black Stanley & Co., Philadelphia	44	Black Stanley & Co., Philadelphia	44
Johnson L. & Co., Spuyten Duvel, N. Y.	44	Johnson L. & Co., Spuyten Duvel, N. Y.	44	Johnson L. & Co., Spuyten Duvel, N. Y.	44
North West Malleable Iron Co., Mil- waukee, Wis.	40	North West Malleable Iron Co., Mil- waukee, Wis.	40	North West Malleable Iron Co., Mil- waukee, Wis.	40
Palmer & De Mott, Cleveland, O.	40	Palmer & De Mott, Cleveland, O.	40	Palmer & De Mott, Cleveland, O.	40
Pittsburgh Steel Casting Co., Pittsbu- rgh, Pa.	44	Pittsburgh Steel Casting Co., Pittsbu- rgh, Pa.	44	Pittsburgh Steel Casting Co., Pittsbu- rgh, Pa.	44
Castings, Steel		Castings, Steel		Castings, Steel	
Quaker Steel Casting Co., Philadelphia	37	Quaker Steel Casting Co., Philadelphia	37	Quaker Steel Casting Co., Philadelphia	37
Eureka Cast Steel Co., Chester, Pa.	44	Eureka Cast Steel Co., Chester, Pa.	44	Eureka Cast Steel Co., Chester, Pa.	44
Black Stanley & Co., Philadelphia	44	Black Stanley & Co., Philadelphia	44	Black Stanley & Co., Philadelphia	44
Johnson L. & Co., Spuyten Duvel, N. Y.	44	Johnson L. & Co., Spuyten Duvel, N. Y.	44	Johnson L. & Co., Spuyten Duvel, N. Y.	44
North West Malleable Iron Co., Mil- waukee, Wis.	40	North West Malleable Iron Co., Mil- waukee, Wis.	40	North West Malleable Iron Co., Mil- waukee, Wis.	40
Palmer & De Mott, Cleveland, O.	40	Palmer & De Mott, Cleveland, O.	40	Palmer & De Mott, Cleveland, O.	40
Pittsburgh Steel Casting Co., Pittsbu- rgh, Pa.	44	Pittsburgh Steel Casting Co., Pittsbu- rgh, Pa.	44	Pittsburgh Steel Casting Co., Pittsbu- rgh, Pa.	44



**Combination Lightning Can-Opener.**

This article is made by the Claffen Mfg. Company, Cleveland, Ohio. It is represented in the accompanying illustration, Fig. 1, from which it will be seen that there are two cutting knives, one of which is used in cutting a round opening, and the other in

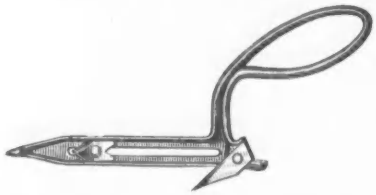


Fig. 1.—Combination Lightning Can Opener.

cutting a square opening. Fig. 2 illustrates the manner in which the opener is used with a round can, from which it will be observed that the point is inserted in the center of the top of the tin can, the knife having been adjusted to the diameter of the desired opening, which is then readily made. This adjustment, it will be perceived, adapts the opener for small or large cans, as desired, and the shape of the knife is alluded to as being such that it lifts the part cut out, and turns down the edge left on the can, thus making a clean and neat job. The rear knife is designed for opening square

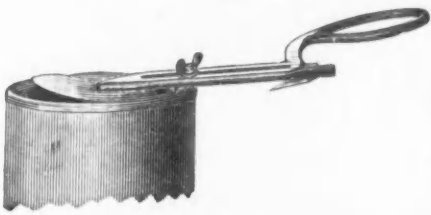


Fig. 2.—Can Opener in Use.

cans, and has a guide which rests against the side of the can, and thus cuts close to and at a uniform distance from the edge.

**Some Forms of Lightning Conductors.**

The Munson Lightning Conductor Company, Indianapolis, Ind., manufacture a number of forms of lightning rods and fittings, some of which we illustrate in the accompanying cuts. In Fig. 1 is shown their  $\frac{3}{4}$ -inch patent copper tubular con-

Some Forms of Lightning Conductors.—  
Fig. 1.—Copper Conductor with Square Iron Core.

ductor, through the center of which runs a  $\frac{1}{4}$ -inch non-corroding iron core, as indicated by the cross section, which is part of Fig. 1. This rod is also made in  $\frac{1}{2}$ -inch size. These conductors, it will be noticed, practically consist of two spiral flanges, rolled from copper, and of such a shape as to form a tubular core, through which runs the square iron rod referred to. A special feature of this conductor, to which the manufacturers direct attention, is that one of the flanges is open, which allows the collected moisture to evaporate quickly, and thus prevents the rapid corrosion of the iron core. The method of joining the sections of the rod is indicated in Fig. 2, which shows the separate sections and the wire-binder. The sections are slipped together, and the wire is fitted in the side slots and twisted tight. Fig. 3 shows a lightning conductor of somewhat similar construction, but without an iron core, the copper flanges being rolled so as to form a central tube of oval section, the double thickness of copper rolled as shown, making it amply strong. A center core, however, is inserted in the uppermost parts of these rods where they receive the points. The Munson copper cable is illustrated in Fig. 4. The cable is made of square copper wires with a square copper wire for the center one, or a round No. 9 wire as may

be preferred. The special advantage claimed for this cable is the large number of sharp edges which it presents, it being generally accepted that the efficiency of a lightning



Fig. 2.—Showing Method of Joining Sections of Conductors.

conductor is very much increased by sharp edges and extended surface. We are informed that the Munson Lightning Conductor Company are the originators of square and

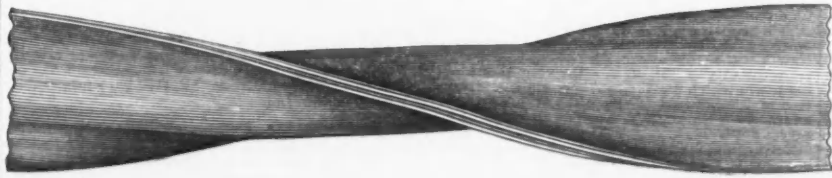


Fig. 3.—Copper Conductor with Hollow Core.

corrugated wires. The top of the rods, except when fastened to the crests or chimneys, are supported in a galvanized-iron brace consisting of a tripod, above which is a rod provided with two holders. The Munson Lightning Conductor Company also make non-insulating fixtures for fastening the rods to the sides of buildings. A glass tail arrow vane or indicator, made by the above company, is illustrated in Fig. 5, the leaf of the vane and the scroll part being gold plated.



Fig. 4.—Copper Cable Conductor.

The vane is for use on the lightning rod and requires no separate support, as the rod itself is held in a brace as described above.

**A Marine Voltmeter.**—Sir William Thomson has devised a voltmeter for electric installations on board ship, which he terms a marine voltmeter. Its essential parts consist of a small oblate piece of soft iron supported on a stretched platinum wire in the center of a solenoid of fine copper wire, connected in series with platinum resistances variable according to the potential to be

measured. A pointer carried by the oblate "needle" shows by inspection the electromotive force in volts. The instrument is based on the principle that an oblate spheroid of soft iron movable round a diameter tends to turn its equatorial plane parallel to the lines of force in a uniform magnetic field. In the zero position the equatorial



Fig. 5.—Glass-Tail Arrow Vane.

plane of the oblate is inclined about 45 degrees to the lines of force of the solenoid, and torsion by the upper and lower parts of the bearing platinum wire, tends to turn it into a position perpendicular to the lines of force. This tendency is balanced by a stop against the needle when no current, or any current exceeding 90 milliamperes, passes through the solenoid. When a current exceeding 90 milliamperes passes, the torsion couple is balanced by the couple due to the electro-magnetic force.

**Ventilating Dinner Pail.**

The accompanying engraving represents a new dinner pail, which combines a number of novel features, that is being put upon the market by Reardon & Ennis, Troy, N. Y. The engraving represents the pail with the side broken away, so as to indicate the construction and the subdivisions. The special feature to which the makers attract attention is the ventilating principle, which enables food of different kinds to be kept for a long time, especially in hot weather, without spoiling. Perforations are provided near the bottom of the pail, as will be noticed, and the section near the top is of perforated tin, thus affording the chance for circulation of air from the bottom through the top, and carrying off any steam or vapor that may be generated within the pail. On removing the cover it is found that the perforations, instead of leading into the body of the pail, communicate with tubes, which are soldered in place at the four corners, and also on op-

described, and the ventilating features, to which we have given attention, are the special points to which attention is directed.

**Emerson's Patent Inserted Toothed Cross-Cut Saw.**

Emerson, Smith & Co., Beaver Falls, Pa., are about to put on the market the saw named above, and illustrated in the cuts given herewith. It will be observed that it is a new departure in cross-cut saws. Fig. 1 represents a portion of a cross-cut saw with inserted teeth, from which it will be observed that all the teeth are a removable section which is held in place in the body of the saw by holders, as shown, one on each side, alternately, of the section containing the teeth. Fig. 2 represents full size a portion of one of these toothed sections which is made with the twin clipper tooth, other sections being made with coarse peg tooth, fine peg tooth and clearer tooth. As constructed, it will be seen that any section of the teeth may be easily removed and another substituted. In order to secure a satisfactory attachment of these sections of teeth to the body of the saw, about one-third of the width of the attached section containing the cutting teeth is beveled back to a sharp edge, and each holder is also beveled on alternate sides, so as to fit exactly the beveled section containing the cutting teeth. The toothed section also has three holes, one in the center and one at each end, while the body of the saw has three small steel pins attached and riveted to it in such a way that when the section containing the cutting teeth is forced into the saw, these pins engage the toothed section and hold it firmly. By this means cutting sections are attached and removed by hand without the use of any tools, and, it is stated, in less than two minutes' time. The body of the saw that carries the sections is made of steel one gauge thinner than the sections, so as to secure the free running of the saw. The removable sections are described as made from a superior quality of steel, 13 gauge, filed, set and ready for use, and the point is made that they are furnished at a less price than it costs to gum any crosscut saw and sharpen it. It is also pointed



Fig. 1.—Emerson's Patent Inserted Tooth Cross-Cut Saw.

out that at a trifling expense fine and coarse teeth and teeth of different patterns can be used with one saw. Descriptions of these saws are given in the company's catalogue, and also large illustrations in their Japanese supplement. These saws have been sold to some extent to consumers and their merits

will be gradually extended to other post offices in the two countries. By this arrangement registered matter between these two cities will be expedited about four days, as it will not be subject to inspection and handling at El Paso and El Paso del Norte, which heretofore has occupied about two

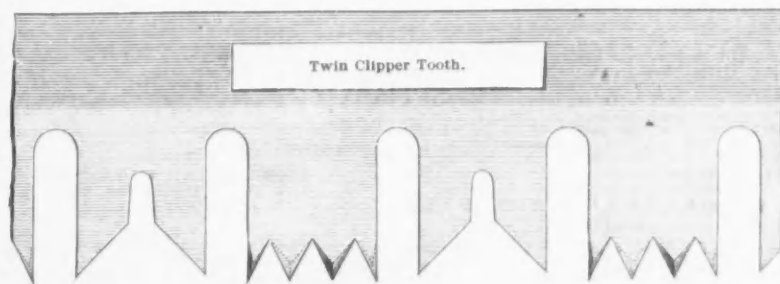


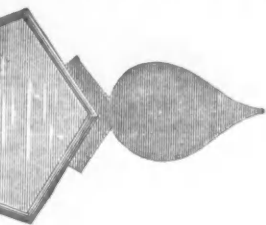
Fig. 2.—Portion of Toothed Section, Full Size.

tested, but the company intend the coming season to offer them to the trade, and are making arrangements for their manufacture on an extensive scale.

days in each office. The new service will go into operation as soon as the Mexican Government can provide the necessary equipment, probably by August 1.

**Indurated Fibre Water Cooler.**

The Union Indurated Fibre Company, 110 Chambers street, New York, have recently put on the market a water cooler which is represented in the accompanying illustration, and is made of the same material as their other indurated fibre wares, to the



Indurated Fibre Water Cooler.

being cheaper than the ordinary article, and that, when not in use in the winter months, it will not deteriorate, but will, with proper usage, last a lifetime. The company keep in stock only up to 6 gallons capacity, but can furnish up to 35 gallons on short notice.

The first vessel to be propelled by electricity ever built in the United States is now in course of construction at a shipyard in Newburg, N. Y. It is a yacht 37 feet long, 7 feet wide and 5 feet deep. It is to be operated by stored electricity. It is building for a Newark, N. J., electric company, and will be run between that city and New York.

Minister Romeo has informed Mr. Bell, Superintendent of Foreign Mails, that the Mexican Government has accepted the proposition of the Post Office Department for the inauguration of a through rotary lock pouch registry system between the United States and Mexico, similar to the one now in force between the United States and Canada. At present, however, this exchange will be limited to the City of New York and the City of Mexico, with the understanding that it



## Special Notices.

## BUSINESS OPPORTUNITIES.

## BUFFALO, N. Y.

The Board of Managers of the Business Men's Association of the City of Buffalo invite the attention of Capitalists, Manufacturers and Business Men generally to the unusual advantages of Buffalo as a manufacturing and distributing point. Parties interested in statistical evidence which will prove the claims of our City as to possessing very superior advantages in facilities for transportation, cheap fuel, low taxes and an exceptionally thrifty, capable and non-striking industrial population and other substantial inducements, are invited to correspond with this Association.

Edmund Hayes, John C. Graves,  
Ralph Plumb, George W. Francis,  
Charles A. Gould, Walter J. Shepard,  
George P. Sawyer, George W. Miller,  
C. W. Hammond, James Crate,  
George H. Lewis, T. Guilford Smith,  
Stephen F. Sherman, Thomas Hodgson,  
Daniel O'Day, Edward H. Fowler,  
Wm. H. Johnson, Joseph P. Dudley,  
John H. Smith, Henry C. French,  
H. E. Folinsbee, Henry Koons,  
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ATTENTION,  
Capitalist - and - Foundryman.

An Incorporated Company offers for sale State Rights to manufacture, and sell a valuable Patent Boiler (for house-heating). Hundreds in successful operation, which can be referred to for full particulars.

Address Box 1006,

## WORCESTER, MASS.

FOR SALE.  
THE MACHINE SHOP AND  
FOUNDRY

with six acres of land, now occupied by THE STILES & PARKER PRESS CO., situated in the city of Middletown, on the Connecticut Valley Railroad. This is the only Jobbing Machine Shop and Foundry on the Connecticut, between Hartford and the Sound, and has the patronage of most of the surrounding towns; possessing good facilities for freightage by the Connecticut River and three railroads. Proposing to remove our business from the city, we will sell this property at a reasonable price, and part payment may be made in cashings. Possession given about October 1st. Apply on the premises, or by letter to

N. C. STILES, Treasurer.

**VALUABLE IRON MINE FOR SALE.**  
This property covers an area of 300 acres and exhibits at various points an ore giving 66 per cent. of iron—furnace best—no sulphur or phosphorus. The property is situated within 10 miles of Ottawa and is most favorably placed for mining operations. The most recent reports upon the property have been received from first-class experts. Title perfect. The new Canadian Iron tariff makes this a most valuable property. Samples of the Ore and further particulars can be obtained by applying to the Manager—Ontario Bank Ottawa, Canada.

**FINE BUSINESS CHANCE.**  
FOR SALE, an established HARDWARE, TIN, QUEENSWARE and STOVE BUSINESS of five years' standing, in one of the best towns on the Texas and Pacific R.R., 230 miles West of Fort Worth, Texas, in the heart of the cattle and sheep district of the State of Texas, with a population of 3000, and growing every year; stock about \$5000 or \$6000, all cash and new. For particulars, address GEO. MILLER, Colorado, Texas.

**FOR SALE.**  
A rare chance to buy a clean and well-sorted stock of **HARDWARE, STOVES & TINWARE** in one of the best towns in Michigan. Stock will invoice \$6000. The best of reasons for selling. Address "JAP," office of *The Iron Age*, 66 and 68 Duane St., N. Y.

**CAPITAL WANTED.**  
From \$25,000 to \$250,000 in an enterprising hardware factory. Have continuously introduced to the trade a new and novel line of goods in the **BUILDERS' HARDWARE** line, and would guarantee a profit to the investment of capital.

WM. GERWIEN,

7 and 9 So. Jefferson Street, Chicago, Ill.

**FOR SALE, to close an estate,**

**A HARDWARE STOCK**  
of \$15,000 in the best business city in Michigan. Business established twenty-five years. Address "HARDWARE STOCK," Office of *The Iron Age*, 66 and 68 Duane St., New York

**FOR SALE, a large and well-sorted stock of HARDWARE.**  
A long-established and profitable business at the old hardware stand, No. 207 Main Street, Jamestown, N. Y. Advantageous lease of store extending to May 1, 1891. Business includes several valuable specialties. The entire business will be sold at a bargain. Complete inventory ready for inspection. For particulars, address A. FRANK JENKS, Administrator of the estate of D. C. RACKUS, Jamestown, N. Y.

**FOR SALE.**  
**A GOOD CLEAN HARDWARE STOCK.**  
In a town of four thousand inhabitants in Southern Dakota; annual sales, \$25,000. This is a rare chance and will bear investigation. Cause of selling, death in family. Address "LOCK BOX 113," Mitchell, Dak.

**Alabama's Mineral Belt.**  
Parties wishing information about, or investment in, Alabama Mineral, Lumber or Agricultural lands, will please address, with stamp, EDWARDS & ARNOLD, Talladega, Ala.

## Special Notices.

## BUSINESS OPPORTUNITIES.

## FOR SALE.

## THE MELVIN SEWING MACHINE CO.'S FACTORY AND GROUNDS.

located in Chillicothe, Ross Co., Ohio, and adjoining the depot grounds of the C. W. & B. and Scioto Valley Railroads. The main building is of brick, 133 x 33 feet; three stories, slate roof, well-lighted and floors 6 in. thick. The Engine, Boiler and Japan rooms and Blacksmith shop are all of brick and covered with tin. The whole building heated by steam and lighted by electricity. It contains a 45 horse-power Reynolds-Corliss Engine, a 75 horse-power Babcock & Wilcox Boiler and Edison Dynamo, all in good condition. One house and lot and three vacant lots, all adjoining the factory grounds. This is a desirable property for manufacturing purposes, and will be sold at a bargain. For further particulars call on or address

NELSON PURDUM, Receiver,

Chillicothe, Ohio.

## AN OPPORTUNITY FOR MANUFACTURERS.

The very best advantages for new manufacturing enterprises in the South are offered by the **GATE CITY LAND COMPANY**, Birmingham, Alabama. The Company's property lies just out of the city of Birmingham, and is traversed by four of the trunk railroads running into the city. It possesses the general advantages of the Birmingham district, including a fine deposit of red hematite iron ore and large quantities of lime rock and building stone. One of its notable peculiar advantages is a pure white glass sand, pronounced by a Northern authority the finest of the kind in the country; while a variety of other sands of lower grade are found on the lands. The latter also have exceptional advantages for a paint mill. The recent large investment of Northern capital in Birmingham property may be taken as conclusive testimony to the splendid advantages of the place for making pig iron. It has twenty furnaces in operation or building; also, in operation, a large rolling mill, stove works, cast pipe works, foundries and machine shops, and a variety of other iron working enterprises. There are now located on the Gate City property a rolling mill, iron safe works, a pottery and several smaller enterprises. The company is now ready to correspond with other manufacturers who may wish to locate in the South, and share in its new prosperity. Every enterprise about Birmingham has all the business it can do. There are no room for new ones, and the undersigned has eligible manufacturing and residence sites to offer to all.

ROBT. WARNOCK.

## FOR SALE OR TO LEASE.

at Perth Amboy, New Jersey, adjoining wharves of the Lehigh Valley R.R. 130 feet of water, admitting largest ocean steamships without obstruction of any kind, 1300 feet dock front by 4000 feet in depth. This property is crossed by the Lehigh Valley Railroad, the Pennsylvania Railroad and the N. J. Central Railroad, and besides being on one of the finest Harbors on the Coast, is also on the line of the Delaware and Raritan Canal Towing Line. Thirty feet of water in front of property, and three Railroads, Lehigh Valley, N. J. Central and Pennsylvania, all crossing the tract. See map on page 37. Address

WILLIAM T. MEREDITH,  
No. 48 Wall St., New York.

**FOR SALE—IRON AND MACHINERY.** RIDS will be received until August 10th, 1887, inclusive, for 250 tons, more or less, of woolen machinery lying in the ruins of our Mills at Newark, N. J., recently injured by fire. Bids will also be received for the sale of the Plant, including about ten acres of land, an estimated fifty horse-power, four boilers aggregating 370 horse-power, a brick dye house building 80 ft. x 90 ft., thoroughly equipped, in first-class condition, etc. For information and circulars in regard to both, apply to DEAN WOOLEN CO., Newark, Del.

**FOR SALE—A clean stock of GENERAL HARDWARE** that will invoice \$6000 and over; located in one of the best, nearest and cleanest towns in Ohio, with a good trade, recently injured by fire. Bids will also be received for 15 years in the same town; low rent; we have not sold tin and stoves, nor implements, with these added, sales would reach from \$50,000 upward; terms of sale, cash, or as good, in bankable paper; no real estate taken. For particulars, address: STULL & CHARLES, Ashland, Ohio.

**FOR SALE.**  
**HARDWARE BUSINESS**  
in Grand Rapids, Mich., a live city of 60,000 inhabitants; old stand; choice location; stock in good condition and closely bought; will invoice \$5000 to \$10,000; will sell at discount to cash buyer. Address "HARDWARE," Box 532, Grand Rapids, Mich.

**FURNACE FOR SALE.**  
A good Charcoal Iron Furnace in Michigan. For particulars, inquire of E. C. P. P. P., 11-12 Wade Building, Cleveland, Ohio.

**FOR SALE.**—Stock of Iron, Steel, Wagon and Carriage material, both iron and wood; also, large convenient Store Room, located in growing manufacturing city in the state, population about 40,000; quite a railroad centre, and on the great Mississippi River, excellent traveling territory on every side; for fine, rich country scarcely equalled. Bu-tense established twenty years. Money made every year. The only store of the kind in the city. Reason for retiring, bad health. LEMLEY BROTHERS, Quincy, Illinois.

**RAKE OPPORTUNITY.**—A first-class MALLEABLE IRON WORKS located in the City of Rome, N. Y., for sale at half its value. A. ETHRIDGE, Rome, N. Y.

**FOR SALE.**  
At GREENWOOD, OHIO, on C. & A. R. R., in one of the finest farming cities Northwest, O., a General Hardware and Grocery Store, with entire stock of goods; a fine residence with good dwelling house and ornamental trees; fine fruits; fine well of water and electricity; 2 acre lot; good stable and outbuilding; a good place to live and good trade; all clear of debts; best bargain ever offered; will double in 10 years; worth \$7000 to a lively business man. J. C. BOHNE, Wren P. O., Ohio.

**FOR SALE.**  
**\$5000. THREE PATENTS.**  
No. 261,141, July 18, 1882, Flexible Pipe Joint.  
No. 242,355, Aug. 22, 1882, Stop Cock.  
No. 268,066, Nov. 28, 1882.  
These patents have never been operated, the inventor and holder now in different line will sell them for the amount named, or will arrange liberally with any party having facilities for and willing to undertake their development. Address "PATENTEE," Office of *The Iron Age*, 66 and 68 Duane St., N. Y.

**FOR SALE.**  
In consequence of the physical disability of the only active partner a clean and well-sorted stock of **HARDWARE** with a large, paying custom. City of 15,000 inhabitants surrounded by the richest farming country in the West and a railroad center. This is a business opportunity and bargain not often found. Address "SEE LER," The Iron Age, 65 & 67 Washington St., Chicago, Ill.

## Special Notices.

## BUSINESS OPPORTUNITIES.

## RECEIVER'S SALE

OF THE

## REAL ESTATE OF THE MAIDENCRECK IRON CO.

Of Blandon, Berks County, Pennsylvania.

Pursuant to an order of sale issued out of the Court of Common Pleas of Berks County, will be sold at public sale on Saturday, July 23, 1887, at 2 o'clock, P. M., at the public house of R. S. Unger, in the village of Blandon (a station on the East Pennsylvania Railroad, eight miles Northeast of the City of Reading), Berks County, the following described real estate of the Maidencreck Iron Company, viz:

No. 1. All that certain six two-story frame dwelling houses and lots of ground on which the same are erected, situate in the village of Blandon, Maidencreck Township, County and State aforesaid; bounded on the North by a public road, East by the property of the Maidencreck Iron Company, South by a ten-foot wide alley and West by property, late of Charles Levan, containing in front 120 feet and in depth 171 feet and 6 inches.

No. 2. All that certain message, tenement and tract of land situate in the Township of Maidencreck, County of Berks, bounded by lands of Isaac Hazy, George Moyer and others, containing 36 acres and 53 perches. Also a message and tract of land containing a dwelling-house and other buildings, situate in the Township and County aforesaid, bounded by lands of Wm. Bockel, public road and the East Pennsylvania Railroad, containing 1/2 acre more or less.

No. 4. All that certain message and tract of woodland situate in Ruscombator Township, said County of Berks, known as the "Shelter Tract," bounded by lands of the late Wm. H. Clymer, deceased, Jeremiah De Turk and others containing 43 acres and 120 perches.

No. 5. All that certain rolling Mill, Office and Blacksmith shop, situate in the village of Blandon, Maidencreck Township, said County of Berks, bounded by the East Pennsylvania Railroad, property late of Benneville Schroeder, two public roads, property of late Charles L. van, deceased, lands of Jeremiah De Turk, Catharine Madeira, Samuel Hawkins and others, containing 11 acres and 15 perches more or less. The Mill building has a length of 22 1/2 feet and a width of 12 feet. It has 11 pairs of rolls, one 18-inch muck train, one 20-inch muck train, one 8-inch guide and hoop train; it has 11 single-puddling and 2 heating furnaces; the motive power consists of 3 engines, aggregating 125 horse power; it has a steam pump, large lathe and 2 pairs saws; it consumes a large portion of the product of the Mill. It is particularly adapted for the manufacture of all kinds of small merchant iron.

Terms of sale: ten (10) per cent. down on Nos. 1, 2, 3, 4, and \$20,000 in cash balance to be paid within 30 days from confirmation of sale by the Court, when deeds will be delivered.

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Receiver of the Maidencreck Iron Co.  
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# Trade Report.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]  
LONDON, WEDNESDAY, July 13, 1887.

**Scotch Pig.**—The market is unchanged. Scotch warrants are 42/. Makers' brands are quoted as under:

Coltness, alongside, Glasgow	55/
Lanark, " " "	50/
Glenbrook, " " "	49/
Garthshore, " " "	48/
Shotts, " " "	47/
Dalmington, " " "	46/
Carnbroe, " " "	45/
Edinburgh, " " "	44/
Summerlee, " " "	43/
Carriage from Ardrossan to Glasgow 18 1/2 ton.	

**Bessemer Pig.**—The market is unchanged. We quote W. C. Hematites, Nos. 1, 2 and 3, 44/ @ 45/.

**Cleveland Pig.**—The market is unchanged at the following prices: 37/ for No. 1 Foundry; 36/ for No. 2; 35/ for No. 3, and 34/ for No. 4 Forge.

**Bessemer Billets.**—Bessemer Billets, 2 1/2 x 2 1/2 inches, are 72/6 @ 75/.

**Bessemer Blooms.**—The market is irregular. Prices are nominally 75/ @ 80/, 7 x 7 inches.

**Bessemer Crop Ends.**—We quote run of mill 52/6 @ 54/6.

**Manufactured Iron.**—The market is a little steadier. We quote:

Staff, Ord. Marked Bars	5 0 0 @ 6 10 0
" " " "	5 0 0 @ 6 10 0
" " " "	4 15 0 @ 5 0 0
Hoops, 20 W. G. and over	5 0 0 @ 6 0 0
" " " "	5 0 0 @ 6 0 0
" " " "	5 0 0 @ 6 0 0
Sheets, 20 W. G. and under	5 0 0 @ 6 0 0
" " " "	5 0 0 @ 6 0 0
" " " "	5 0 0 @ 6 0 0
Weld Bars are quoted	£4. 2/6 @ £4. 5/.

**Steel Rails.**—The market is still irregular and prices are £4 @ £4. 5/.

**Old Rails.**—The market continues irregular, with prices for T's and Double Heads, c.i.f. New York, 60/ @ 65/.

**Scrap.**—The market is unchanged, with Heavy Wrought at 50/ @ 55/, c.i.f. New York.

**Copper.**—The market is a little steadier. Chili Bars closing £30. 15/ @ £40, and Best Selected £41. 10/ @ £45.

**Tin.**—The market closes a little firmer, with spot at £104 @ £104. 10/, and futures at £103. 10/ @ £104.

**Tin Plates.**—The market is firmer and 3d. higher on common Cokes. We quote:

Tin Plates, 10x14, 1st qual. Charcoal	17 @ 18
" " " "	16 @ 17
" " " "	15 @ 16
" " " "	14 @ 15
" " " "	13 @ 14

**Spelter.**—The market is steadier. We quote £14. 10/ @ £14. 12/6.

**Lead.**—We quote Common English £12. 2/6.

**Freights.**—Steam freights from Glasgow to New York have advanced to 10/5, and Liverpool to New York 8/ @ 9/.

## Financial.

Office of The Iron Age,  
WEDNESDAY EVENING, July 13, 1887.

As compared with one week ago, the most notable features in a business point of view are the greater ease in money and stronger position of the banks, together with a moderate accession of gold from Europe. The weekly bank statement was unexpectedly favorable, showing an increase of surplus reserve amounting to \$2,701,375, this item now standing at \$6,352,450. The increase was wholly due to a gain in specie and mainly through Sub Treasury operations, as the interior movement was probably against this center. Loans were contracted \$3,379,900. The disturbance caused by the failure of the Fidelity Bank (whose charter is now declared forfeited) and other troubles in the West, seems to have wholly disappeared. Comptroller Trenchum, after a personal examination, reports that the banks both in Cincinnati and Chicago are thoroughly sound, causing no further uneasiness. In Europe the Continental Bourses are again agitated, partly in consequence of the angry tone of the Paris and Berlin journals, and in part by articles depreciating further investments in Russian securities. In London consols declined from 101 1/2 to 101 1/4, while American railways fell off everywhere from 1/4 to 1/2. There is no change in the Bank of England rate of discount, which remains at 2%. In the New York market there is little demand for commercial paper. Offerings for discount are closely scrutinized. More or less distrust is occasioned by large speculative operations, more especially in the west, not to speak of the disposition to form enormous "Trust" combinations which tend to unsettle legitimate trade. A prominent banker quotes Secretary Fairchild as saying that, should the monetary situation demand relief, the Government would offer to purchase the miscellaneous United States bonds now outstanding, and would pay a reasonable, but not an extortionate price for them.

According to the Custom House report, the exports of specie from this port last week were \$185,400 and the imports \$579,680, making the totals since January 1 \$10,455,000 and \$6,002,000 respectively, against \$42,400,000 and \$6,165,000 for the same time in 1886. On Friday \$2,000,000 in foreign gold arrived, which fact bankers were re-

luctant to make public lest it should affect the rates of exchange.

Appropos of Mr. Jordan's scheme to deal in certificates based on deposits of silver bullion, the London Economist remarks: "The new method of dealing will, it is expected, afford great facilities for the withholding of supplies, for under it producers will not have to put their silver upon the market at once in order to keep themselves supplied with funds, but will be able to make deposit of it and get certificates, upon which, as they will be marketable securities, banks will advance money. The product of the Central and South American States considerably exceeds that of the United States, and for these countries London is naturally a better market than New York, not only because their general trade lies more with this country, but also because it is through London that the Indian demand for the metal is, and is certain to continue to be, supplied. In some quarters here, however, it has been felt that it would be best not simply to rely upon our more advantageous position in meeting New York's attempt to dominate the silver market, and a scheme for the initiation of a similar method of dealing here to that which has been adopted in New York is now, we understand, under consideration."

The Stock Exchange market has been dull, but generally strong; transactions limited. A break in cotton oil trust early in the week attracted some attention, and toward the close, the impending deal in Baltimore and Ohio Railroad was a fruitful topic for discussion—the result as yet unknown. On Monday prices were weakened by a decline in London. On Tuesday there was a small business, with no special features, and to-day the changes were insignificant.

United States bonds closed as follows:

U. S. 4 1/2, 1891, coupon	109	@ 109 1/4
U. S. 4 1/2, 1897, coupon	127 1/2	@ 127 3/4
U. S. 4, 1891, 1895	123	@ 123 1/2
U. S. 4, 1891, 1896	124	@ 124 1/2
U. S. 4, 1891, 1897	124	@ 124 1/2
U. S. 4, 1891, 1898	124 1/2	@ 124 3/4
U. S. 4, 1891, 1899	123	@ 123 1/2

Sterling is weak, and posted rates are reduced 1/4 @ £ to \$1 83 @ \$1 85, which is about the gold importing point.

Copies of the new trunk line freight classification, which has been so much discussed, have been issued. The classification, which is known as "No. 2," will go into effect on Friday, superseding No. 1, which was put in force by the railroads April 1. There have been no sweeping alterations in any department. The differential trunk line freight rate of 2¢ in favor of Philadelphia and 3¢ in favor of Baltimore, as against New York, is again a matter of complaint by the Vanderbilt lines, who find the Baltimore and Ohio and Pennsylvania engrossing too large a share of the export traffic. Chairman Blanchard, of the Central Traffic Association, has the matter under advisement.

Freight shipments by rail from Chicago decreased 10,000 tons under reduced rates by lake.

General trade is sustained in good volume, making due allowance for holiday interruptions, and the mercantile agencies report prospects favorable for an active fall trade. Bank clearances in 36 cities last week show an increase of 8.2 % compared with the corresponding week last year. Outside of New York the increase was 13.9 %. New York gained 5.2 %. Wheat shipments are at a satisfactory rate. Crop reports conflict. The Government report gives the condition of the winter crop a trifle poorer than a month ago, while the Farmer's Review, bringing reports down a week later, to July 9, says that its correspondents in the chief counties of the great winter wheat States indicate a yield of 17 bushels per acre in Illinois, 15 1/2 bushels in Indiana, 13 bushels in Kansas and Michigan, 18 1/2 bushels in Missouri, 16 in Ohio and 16 1/2 in Wisconsin, which is a larger yield per acre than expected. The same discrepancy is noticed in regard to spring wheat. Coffee has stiffened in price and is going out more freely. Hog products are weak. Cotton is a fraction lower. Walter T. Miller & Co. bought the first bale of new crop Texas cotton, paying 23¢ p. lb. Another bale arrived from Brunswick, Ga.

The imports of merchandise at this port during the past week were valued at \$9,774,209, making a total since January 1 of \$245,789,726, as compared with \$250,320,000 for the same time in 1886, and \$201,901,976 in 1885. The exports are \$342,075 above those for the previous week, the total being \$6,812,761, making the aggregate since January 1 \$157,882,506, against \$164,187,000 for the same time last year, and \$178,935,000 in 1885. The items include 1,860,000 bushels of wheat, 13,416 bales of cotton, and 4,763,000 gallons of petroleum.

Statistics of the commerce of this port for June are complete. The imports for the month were unexpectedly large, amounting to \$41,280,427, or \$5,000,000 in excess of the total for June last year, and \$11,000,000 above the total for June, 1885. For six months the imports amount to \$239,251,000, against \$218,307,000 for the corresponding period last year. The exports from New York for June have largely diminished, the total exclusive of specie being \$25,623,000, against \$29,350,000 for June, 1886, and for six months the exports \$147,637,622, against \$149,467,000 for the corresponding period in 1886. The returns from the whole country will probably show that the small balance of trade in our favor at the close of May is wiped out.

The Lenox Hill Bank has been incorporated and will open for business on the southwest corner of Seventy-second street and Third avenue the 1st of August; capital, \$1,000,000. The Comptroller of the Currency has authorized the Second National Bank of Hoboken, N. J., to begin business with a capital of \$125,000.

## General Hardware.

There is little change in the general situation since our last review. Trade continues in limited volume, but with signs of an increasing demand, some orders from the South and West being received, and more inquiries with a view to business at a later date. Prices are remarkably steady, the changes during the past week being few and unimportant.

### BARB WIRE.

The market is quiet, with carload lots of Four-Point Galvanized at 4.10¢, 3-ton lots at 4.30¢, and 4.40¢ for smaller lots.

Referring to the newspaper reports concerning the litigation at St. Louis between the Washburn & Moen Mfg. Company and the Freeman Wire Company, we are informed that the motion was not dismissed, but was simply postponed in order to give them an opportunity to procure an affidavit.

### NAILS.

The market is moderately active and is firmer in tone. We continue to quote \$2 @ \$2.10 for carload lots, and \$2.10 @ \$2.15 for small lots of Iron Nails from store.

### MISCELLANEOUS PRICES.

Notwithstanding the present prices of Steel, the File market does not show any improvement in tone, and, while prices are not materially changed, there is a slight tendency toward quotations a shade lower than those which have recently prevailed.

Advices are to the effect that comparatively little is being done in Strap and I Hinges, indicating that the trade do not regard the outlook as promising for an early advance in prices. It does not appear that the manufacturers outside the association have followed in the advance recently announced. Many jobbing houses are selling at about 70 per cent. discount, an extra 5 being sometimes given.

Wrought-Iron Pipe remains without material change, the market being, however, characterized by a slightly firmer tone, and manufacturers showing less disposition to accept orders at the extreme prices.

Sad Irons are held at slightly higher figures than have recently been ruling, and the market is regarded as quite firm.

The Grand Crossing Tack Company, Grand Crossing, Ill., have recently issued the discount sheet and net list which are printed below. In their circular accompanying it they allude to the market as having reached the point where manufacturers unfavorably situated are obliged to close down their works indefinitely, referring to this as signifying that the bottom has been touched, so that the dealer cannot lose money by buying now. They also call attention to the low prices on their net list and the discounts on their list discount sheet, which they refer to as for standard weights, as explained in their Tack catalogue. The prices thus referred to are as follows, there being a discount of 2 per cent. for cash in 30 days:

	Dis. per cent.
American Iron Carpet Tacks (Polished, Blue Tinned or Copper Plated)	50¢
Steel Carpet Tacks (Polished, Blue Tinned or Copper Plated)	50¢
Swedish Iron Carpet Tacks (Polished, Blue Tinned or Copper Plated)	50¢
Picture Frame Points	50¢
Looking Glass Tacks	50¢
Trunk and Chest Nails	50¢
American Iron Cut Tacks (Assorted Boxes, 1/4 wt. 100 Papers per Box)	50¢
Tinned American Iron Carpet Tacks (Assorted Boxes, 1/4 wt. 100 Papers per Box)	50¢
Finishing Nails	50¢
American Iron Hungarian Nails	50¢
Swedish Iron Hungarian Nails	50¢
Trunk and Chest Nails	50¢
Tin Capped and Copper Capped Trunk Nails	50¢
Droom, Pall Miners, Cheese Box, Distillers, Star Head, Railroad, Medallion, Bull Posters and Trunk Tacks	50¢
Swedish Cut Carriage Trimmers, Berry Box, Card, Coopers and Basket Tacks	50¢
Upholsterers' Tacks	50¢
Upholsterers' Tacks	50¢
Gimp Tacks	50¢
Glazier's Points	50¢
Wagon Nails	50¢
Double-Pointed Tacks (Polished Blue or Coppered)	50¢
Wire Carpet Tacks	50¢
Wire Nails (Japaned and Silvered)	50¢
Saddle Nails (Japaned and Silvered)	50¢

### Extras.

1. For Tinned and Copper Plated Goods on Hardware List for which prices are not given, add 10 cents per pound.  
2. For goods named on Hardware List sold by the pound, when put up in 1/4 pound papers, 1/4 cent per pound will be added to the list; when put up in 1/2 pound papers, 1 cent per pound will be added to the list.

### Net List.

1d. Fine Steel Nails, Polished	\$3.75	Blue, \$5.55
3d. Fine Steel Nails, Polished	5.00	Blue, \$5.55
5d. Fine Steel Nails, Polished	4.25	Blue, 4.35

### Barrel Nails.

(Steel.)	1/2	3/4	1	1 1/4	1 1/2
Per 100 lbs. Common	\$6.25	5.25	4.25	4.05	3.85
Per 100 lbs. Fine	6.75	5.75	4.40	4.20	4.00

### Roofing and Slating Nails.

(Steel Annealed.)	1/2	3/4	1	1 1/4	1 1/2
Inch	7/8	1	1 1/4	1 1/2	1 3/4
Per 100 lbs.	\$4.50	4.30	4.10	3.80	3.50

Tinned, \$2.50 per 100 lbs. advance.

### Seeds Iron Coopers' Tacks.

12 oz. $\frac{1}{2}$	14 oz. $\frac{1}{2}$	16 oz. $\frac{1}{2}$	18 oz. $\frac{1}{2}$	in.	M
$\left\{ \begin{array}{c} 8 \\ 8 \end{array} \right\}$	$\left\{ \begin{array}{c} 8 \\ 8 \end{array} \right\}$	$\left\{ \begin{array}{c} 8 \\ 8 \end{array} \right\}$	$\left\{ \begin{array}{c} 8 \\ 8 \end{array} \right\}$		a
\$8.25	8.00	7.75	7.50		r

### Patent Hoop Nails.

(Every Nail a perfect clinch.)						
inch . . . . .	$\frac{3}{8}$	6-8	$6\frac{1}{2}$ -8	$\frac{7}{8}$	$7\frac{1}{2}$ -8	1
per 100 lbs.	\$7.35	6.25	5.75	5.50	5.40	5.25

Coopers' Staples. (Copper-plated.)			
Wide Long.	Wide Long.	Wide Long.	Wide Long.
1/2 x 3/4	3/4 x 1	1 x 1 1/4	1 1/4 x 1 3/4
All sizes \$7.50 per 100 lb.			

### Double Pointed Tacks.

Coppered, Blue or Polished.	Per 100 lb.	No.	Tinned.	Per 100 lb.	No.
9	\$12.50	9	\$15.00		
10	12.00	10	14.50		
11	11.00	11	13.50		
12	10.50	12	13.00		
13	10.00	13	12.50		
14	10.00	14	12.50		

All goods delivered to depot or dock, Chicago, with no charge for cases or cartage.

### ITEMS.

The New York Belting and Packing Company, New York, with a view to the still further extension of their business, have found it necessary to establish a branch depot at Hamburg, where Persicaner & Co., Pickhuber 5, have been appointed general agents, and will carry a full stock of the company's goods. As Hamburg is a free port of entry, it will be used as a distributing point for other Continental markets.

The Wells & Nelligan Company, of Chicago, are rapidly disposing of the stock of Keith, Benham & D-zendorf, which they recently purchased. They are offering special inducements in order to close out this stock in 90 days if possible. The consolidated business of both firms will be done thereafter at the company's main store, Nos. 72 to 76 Lake street.

The trade will observe on page 18 the advertisement in which R. B. Thomas, 90 Chambers street, New York, announces his readiness to represent manufacturers of Hardware Specialties.

The Louis Hoffman Hardware Company, Vicksburg, Miss., which was incorporated last year, the business having been established in 1857, held their first annual meeting July 4, at which, we are advised, a cash dividend of 8 per cent. was declared. Louis Hoffman, who has been continuously in the Hardware business in that city for the past 30 years was re-elected president, F. J. Hoffman being chosen vice-president, and D. B. Rundle, secretary.

Montgomery & Co., 105 Fulton street, New York, advise us that they are still carrying a full stock of H. H. Barton's Flint and Emery Paper and Cloth, and also Garnet Paper, which they are prepared to furnish at factory prices as formerly.

Braunsdorf & Gerstner, 634 Eighth avenue, New York, are putting on the market some specialties in the way of Mechanics' Tools. Among these are Forban's Blind Tenon, and McCullough's Combination Gauge for hanging doors. They are also making the Common Sense Blind Adjuster.

W. R. Howell, who has been connected for a long time with the Lloyd & Supple Hardware Company, of Philadelphia, as their buyer, resigned his position with them June 27, mutually pleasant relations existing between both parties. We understand that for the present he proposes to take a vacation of at least two months, after which time he will probably be ready to make a business connection in the same line.

Some improvements which have recently been made in the establishment of the

### JOHN P. LOVELL ARMS COMPANY,

Boston, Mass., are described in a recent issue of the Boston Globe, and referred to as rendering their store one of the most attractive in the city. As now arranged it has frontages on Washington and Brattle streets and Cornhill, and consists of two buildings connected with each other at each story by wide doorways. The rear building has been so thoroughly changed that it may be referred to as reconstructed from top to bottom. Referring more in detail to these changes, the Globe says:

The basement has been enlarged and extended several feet beneath the Cornhill sidewalk. On the Brattle street side an entire glass front has been inserted and an attractive entrance made, so that people may enter this room, which is devoted to the retail sale of Fishing Tackle, Sporting and Base Ball goods, directly from the street. On the floor above is a room that is flooded with light, both ends being composed almost entirely of glass. This is the retail Gun room, and around its walls are fowling pieces of almost every description. Directly over this is the wholesale department. A part of this story is devoted to the Springfield Bicycle and Bicycle sundries, of which this house makes a specialty. The several stories are connected by a large elevator of an improved kind, which is very smooth running. Besides their Boston store the company have a large factory in Worcester, in which are employed 400 men, and where they manufacture some of their well known fire-arms. In addition to their many different patterns of revolvers, they are busily engaged in producing a new hammerless self-cocking revolver, which is entirely new, and which will possess many improvements not found in any other as yet in the market. They make a specialty of manufacturing Bean's patent police equipments, which are the latest and most improved goods in use.

### OBITUARY.

We regret to have to announce the death of Samuel C. Tatum, of Samuel C. Tatum & Co., Cincinnati, Ohio. In a minute adopted by the Chamber of Commerce, of that city, a sketch of his business career is given, and appreciative tributes paid to his worth:

Mr. Tatum was born in Wilmington, Del., May 13 1827, of Quaker parentage. Soon after completing his education he became an apprentice in a machine shop and served his four years. After his marriage in 1849, he moved to Cincinnati and engaged in the machine and foundry business. In 1859 he embarked in business for himself at the cor-

ner of John and Water streets, and was eminently successful. At the time of his death Mr. Tatum was vice-president of the Queen City Bank, and also of the Cincinnati Tool Company. He was a director of the Egan Company, the Hall's Safe and Lock Company, the Champion Coal and Towboat Company and of the Art Museum. He was one of the original trustees of the Cincinnati Museum, and also of the Art School, as well as a member of the Committee on Building and Grounds of the Chamber of Commerce. The last check bearing his signature was for the benefit of the Museum. Among his many honorary offices he held that of member of the Council of Avondale.

### F.O.B.

Relating to the question as to the significance of the term f.o.b., we have the following contribution from the Wire Goods Co., Worcester, Mass., which is written, it will be observed, in view of the diversity of opinion expressed in the letters from manufacturers and merchants which were printed last week:

We notice quite a diversity of opinion among your correspondents, but it seems to us that it arises from a misunderstanding of your question, and that your replies, although appearing widely different, still do in fact agree. The manufacturer of Nails, who, of course, never charges for cases, and the manufacturer of Wire, who, of course, supplies the Wire neatly coiled, do not know what the question of cases means, and if you ask him what f.o.b. signifies he will promptly reply that it means free of charge for cases and cartage. On the other hand, the manufacturer of small goods and assorted Hardware, who must, of course, charge for cases unless he sends the goods loose, promptly answers that f.o.b. means that he will get the goods on board cars or steamer free of expense for drayage. In our own business we have two departments, one of Nails and the other of small assorted Hardware, and we find the conditions and the customs of the trade entirely different in each. Nails and similar goods are packed in kegs, and there never has been any charge for cases. If we made Nails exclusively we should reply to your inquiry as other Nail men do, but when we come to assorted Hardware in small packages, which must be carefully packed, and the customs which apply to the regular case goods have nothing to do with the etiquette of the trade in handling tasty and reputable Hardware.

It would, however, appear, after giving due weight to the considerations above referred to, that there is a wide diversity of opinion and practice in regard to the usage of the term. This is indicated not only by the extracts from letters of jobbers and manufacturers which were published in our last issue, but also in those given below:

J. F. Wollensak, Chicago, Ill.—We are pleased to learn that you evidently intend agitating the question, for there seem to be many definitions, and the exact meaning ought to be settled by some acknowledged authority. We have always maintained that in the absence of qualifications the term f.o.b., as applied in the purchase of goods, means free on board, and no charge for cases, packing or cartage.

A. G. Thompson & Co., Boston, Mass.—Refers only to cartage.

Gunn Hardware Company, Grand Rapids, Mich.—The term f.o.b., as applied in the purchase of a bill of goods, we have always understood to refer to cartage only. The manufacturers almost invariably charge for packing and casing, particularly in broken cases. The whole-ale merchant is therefore obliged to make some charge for cases and packing or he will lose money.

Ducharme, Fletcher & Co., Detroit, Mich.—We construe f.o.b. to mean no charge for cartage, and the question of charge for packages does not enter into it in any way.

G. C. Dunklee & Co., Boston, Mass.—F.o.b., as we understand it, refers to cartage only.

Thomas Foster & Sons, Utica, N. Y.—Refers only to cartage, in our opinion.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill.—We understand the common usage of the term f.o.b. to be free delivery, and to have no reference to package, unless so stipulated.

Rice, Born & Co., New Orleans, La.—Our understanding is that the term f.o.b. means that the articles are to be delivered at railroad, steamer or any other carrier without any charge for box or cartage. Such has been our understanding for the past 30 years, and we have had no trouble whatever with those from whom we purchased, for the reason that they understand it in the same way.

Brown, McClure & Co., Boston, Mass.—The term f.o.b., as applied to quotations and in the purchase of a bill of goods, means that there shall be no charge for carting or wharfage—i.e., the goods shall be delivered free on board, and has no reference to cases, &c.

Wm. Frankfurth Hardware Company Milwaukee, Wis.—There is a great diversity of opinion on the meaning of the expression f.o.b. cars. To give you our opinion of it is best to illustrate it as follows: If Mr. Smith, of New York, offers us his goods free on board cars, New York, we have to pay package or boxing, but no cartage. If Mr. Smith, of New York, offers us his goods f.o.b. cars, Milwaukee, we would understand and claim no package, no boxing and no cartage. It is in this latter case immaterial to us how the manufacturer delivers his goods here, as it is his risk to have them delivered here in good shape. In the first instance it is our interest to have them properly and carefully packed, and we must be willing to pay for cases.



## Trade Report.

**Moore Mfg. Company, Chicago, Ill.**—We understand the term f.o.b. as applying to freight and cartage only, and having no reference to cases.

**Joseph Woodwell & Co., Pittsburgh, Pa.**—We understand f.o.b. to be free on board of boat or railroad, without any charge for cases or cartage.

**Greer & Laing, Wheeling, West Va.**—We would understand f.o.b. no charge for cases or cartage.

**Miller Bros. & Fletcher, Minneapolis, Minn.**—We have always understood the term f.o.b. as meaning that no charge is to be made for cases or cartage. The goods free on board.

**Empire Hardware Company, Council Bluffs, Iowa.**—We understand f.o.b. to mean no charge for cases and no charge for drayage.

**Charles H. George & Co., Providence, R. I.**—We have always regarded f.o.b. to apply to cartage only, and not to cases. It is quite common for parties who charge for cases to so state where the terms are f.o.b.

**S. B. Hubbard & Co., Jacksonville, Fla.**—We have always understood the term f.o.b. to be no charge for boxing or cartage, and have made it the basis of our movements in all transactions coming under this head.

**Page, Newell & Co., Boston, Mass.**—With us the term f.o.b. refers solely to cartage.

**William Bryce & Co., 29 Chambers street, New York.**—We understand the term f.o.b. to refer to cartage only.

**John R. Kelso, Jr., Baltimore, Md.**—We understand the term f.o.b. to mean that goods will be delivered free of all charges of packing or cartage, on the cars or wharf at place of shipment, unless the package should be excepted and so named in contract.

**James H. Ellison, Waltham, Mass.**—I understand that the letters f.o.b. refer only to cartage. They are the initial letters of the words "free on board," and signify that the seller of the goods will deliver them at a place agreed upon, such as wharf or railroad station, without charging cartage therefor, from which point, after such delivery, they are to be transported to such place as the purchaser may designate, at said purchaser's expense.

**Cington, Carpenter & Co., Providence, R. I.**—Our construction of f.o.b. is that it simply means that there shall be no cartage added, but the goods, and cases if need be, will be delivered free to the point agreed.

**Albert Bros., Baltimore, Md.**—Free on board means delivered free at railroad or boat; no charge for cartage, usual charges for boxes, &c. This is our version of the term f.o.b.

**Henry S. King & Sons, Baltimore, Md.**—Our opinion is f.o.b. applies to drayage only, and has no bearing upon boxing.

**Norway Steel and Iron Company, Boston, Mass.**—As we understand the term f.o.b., it applies only to cartage, and nothing else.

**Moses Pond & Co., Boston, Mass.**—Our understanding of f.o.b. is that it refers to cartage only.

**Henry N. Clark, Boston, Mass.**—By f.o.b. we understand delivered on board cars or boat free of all charges for cartage. If no charge is to be made for cases, it must be specified otherwise than by the term f.o.b.

**Van Camp Hardware and Iron Company, Indianapolis, Ind.**—When we use the term f.o.b. on our orders, we understand that it means f.o.b. cars, no charge for cases or cartage.

**Standard Bros., Detroit, Mich.**—F.o.b. we understand to mean no charge for cartage.

**Ogill Bros. & Co., Memphis, Tenn.**—We understand the term f.o.b., as applied in the purchase of a bill of goods, to signify that no charge is to be made for cases, unless otherwise specified.

**L. L. Ensworth, Hartford, Conn.**—I do not understand that the term f.o.b. applies to cases, but only to cartage. My opinion, however, is that jobbers and manufacturers should pack their goods without charge.

**Carter, Magill & Ewing, Chattanooga, Tenn.**—We understand the term f.o.b. to mean that no charge is to be made for cases or cartage.

**Barker Chaisey & Co., Providence, R. I.**—We have always considered f.o.b. simply to mean no charge for cartage, and having no relation whatever to cases.

**Phillips & Butterfield Mfg. Company, Nashville, Tenn.**—We understand f.o.b. to mean no charge for cases or cartage, and would certainly contend for this construction in every case.

**Sieg & Williams, Davenport, Iowa.**—F.o.b. means no charge for cases, and none for cartage.

**Lee, Fried & Co., Omaha, Neb.**—It is like the fourth section of the Interstate Commerce law. I should take it to mean that the goods are bought at a specified price and terms; the terms or words free on board mean precisely what they say—no more charges than those agreed upon when purchase was made.

**St. Joseph Iron Company, St. Joseph, Mo.**—We hold that f.o.b. refers to the merchandise only when proper cases are charged but drayage is free.

**Paddock-Havely Iron Company, St. Louis, Mo.**—Our understanding of the term f.o.b. is that no charge is to be made for drayage or loading on cars. This applies to where we had the cars ourselves, but if delivered at the depot it means, as we understand it, delivered at depot free of drayage. Our customers, however, do not always accept this understanding, and in nine cases out of ten they insist that f.o.b. means free of both drayage and package charges. It is a matter that ought to be settled by all large houses, as it frequently leads to a misunderstanding.

**Todd-Donigan Iron Company, Louisville, Ky.**—We understand the term f.o.b. to mean delivery at depot or wharf free of any charge

for hauling, boxes, &c., unless the contrary was stated in order or contract.

**Morgan & Beach, Fort Wayne, Ind.**—We understand the term f.o.b. to mean free of all charges for cases and cartage. Where the term used is "freight allowed," a charge for cases and cartage may be made, but this is not always done.

**G. S. Cottrell & Co., Quincy, Ill.**—Where we quote a customer a price f.o.b. we never charge for either boxing or cartage. In buying f.o.b. we understand no charge for either boxing or cartage, unless price of cases is specially mentioned, as is generally done by manufacturers of Sad Irons, Lantern Globes, &c.

**L. M. Rumsey Mfg. Company, St. Louis, Mo.**—In a general way we interpret the term f.o.b. to imply delivery free on board cars without charge for packages, excepting, however, in the case of certain lines of goods on which all manufacturers of them have a standard and uniform charge for either regular or special packages, and which charges have been established by custom.

**Francis T. Witte Hardware Company, 106 Chambers street, New York.**—We would let f.o.b. apply to cartage only. Original factory packages for which no extra charge is made, would be deliverable free of all cost at railroad depot or ship. Factory packages and store packages usually subject to charges, would be charged, but no cartage in either case.

**Strong-Hickett Hardware Company, St. Paul, Minn.**—In relation to the term f.o.b., as applied in the purchase of a bill of goods, we would say that in our opinion it has no reference to the charge for cases—that is, if a manufacturer or dealer was in the habit of charging for cases and he agreed to deliver the goods f.o.b. at any particular point, he could consistently charge for the cases.

**Stafford & Rice, Keokuk, Iowa.**—We would understand that there would be no charge for boxes, but the other party would have a chance to understand that f.o.b. meant only that no drayage was to be charged—that is, I do not believe it is a settled point, and in placing order would protect ourselves as to charge for cases as well as drayage.

**Lloyd & Clarke, La Crosse, Wis.**—When we are quoted by a seller with a price without further qualification, we would understand f.o.b. to mean free of charge for both packages and cartage.

**C. S. Mersick & Co., New Haven, Conn.**—We understand that the term f.o.b. applies only to cartage charges, charges for cases being a separate item and subject to special agreement.

**Fowler & Son, Buffalo, N. Y.**—We should say that there was to be no charge for cases.

**S. D. Kimbark, Chicago, Ill.**—My understanding of the term f.o.b. is, that it means that goods are to be delivered to the transportation company free of all expense for cartage to the buyer, and that it has no reference whatever to charges for cases and packing.

**Weed & Cornwall, Savannah, Ga.**—We understand f.o.b. to signify that there is no charge for cases nor for anything else attached to an article sold f.o.b.

**H. & J. H. Tenk, Quincy, Ill.**—We understand it to signify that no charge is to be made for cases—free on board.

**Lambert & Bishop Wire Fence Company, Joliet, Ill.**—We understand the term f.o.b. to mean that goods are sold free on board cars without any further expense than the price agreed upon with the purchaser, and take it to mean that it covers all charges for cartage or cases, or both.

**W. S. Mallory & Co., Chicago, Ill.**—With us it means simply "no cartage," as we do not use cases.

**Farwell, Ozmun, Kirk & Co., St. Paul, Minn.**—Our understanding of the term f.o.b. is that it means goods shall be delivered to transportation company without charge for cartage. It has no reference to cases.

**Dudley Bros. & Lipscomb, Nashville, Tenn.**—We believe the term f.o.b. means packed and delivered without charge, in the depot or on wharf.

**Jones & Laughlins, Chicago, Ill.**—Our understanding of the term f.o.b. is that it covers free delivery only, and does not cover charges for boxes or packages, which may be charged for if customary in that class of goods.

**A. J. Harvi, Atchison, Kansas.**—It has always been the understanding that the term f.o.b., as billed to purchasers on a bill of goods, means without charge for cases and drayage, and the majority of manufacturers so construe it. Some of the Hardware manufacturers in New England, especially the Lock men, are charging for cases, but, as I stated before, the great majority of the Hardware dealers and manufacturers construe it to mean without charge for cases and drayage.

**Chicago Stamping Company, Chicago, Ill.**—Our understanding of the term f.o.b. is that no charge will be made for either cases or cartage.

**John Booth, Chicago, Ill.**—I consider the term f.o.b. literally to mean free on board, without charge for boxing or cartage.

**Fieldhouse & Dutcher Mfg. Company, Chicago, Ill.**—We always charge for cases or whatever the package may be when sales are made under quotation f.o.b.

**Penn Hardware Company, Reading, Pa.**—F.o.b. we understand to apply to cartage only, and not to cases; cases to be charged for, unless otherwise agreed upon. Goods delivered f.o.b. means, as we understand it, no charge for cartage, cases or freight.

**Branford Lock Works, Branford, Conn.**—Our understanding of f.o.b. is that the party from whom the goods are purchased delivers the same on board of cars or boat free of charge to us, and has no reference to cases or package.

**Stevens & Bruce Iron Company, Kansas City, Mo.**—We always understand the terms f.o.b., as applied to the purchase of a bill of goods, not to mean cases free, but only as applying to cartage. It will be very interesting to us to know the opinion of others concerning this. We never knew of its being brought up before.

**Hiram Holt & Co., East Wilton, Me.**—Our understanding of an f.o.b. quotation is that a net cost is given, and that no charge whatever can be added thereto in carrying out the invoice.

**Kelley, Maus & Co., Chicago, Ill.**—We understand the term f.o.b. cars to apply to cartage only. Boxing is a charge many manufacturers and all jobbers make and insist upon.

**Landers, Frary & Clark, New Britain, Conn.**—F.o.b. has nothing to do with matter of cases. It applies only to matter of cartage.

**Pennsylvania Bolt and Nut Company, Lebanon, Pa.**—We have never before heard it suggested that the term f.o.b. had any reference to cases or packages in any way whatsoever. When we buy or sell f.o.b. cars, it is understood that the buyer is at no expense for delivery to or loading of said cars.

**A. G. Coes & Co., Worcester, Mass.**—We understand the term f.o.b. to mean that no charge is made for cases or cartage.

**Barton Bell Company, East Hampton, Conn.**—We have always considered that the term f.o.b., as applied in the purchase of a bill of goods, referred simply to the charge for transportation, and did not apply to the goods or their covering, and have acted in accordance with that view of the case.

**Henry Seymour Cutlery Company, Holyoke, Mass.**—As we look to England for old precedents and customs, it would be well to find out definitely how f.o.b. is construed there. On inquiry of one long engaged in mercantile pursuits in London, he informs us that f.o.b. includes cases and cartage invariably, unless otherwise specified.

**Woodruff, Miller & Co., Mt. Carmel, Conn.**—We should consider the term f.o.b. to refer to cartage only.

**Russell, Burdall & Ward, Port Chester, N. Y.**—We do not understand f.o.b. to include cases. It is only for delivery to the shipping point, and our charges are made accordingly. It is not customary to charge for cases in our kind of goods.

**Wiley & Russell Mfg. Company, Greenfield, Mass.**—Unless the item of cases or packing is mentioned, would say that the f.o.b. makes charges for such things inadmissible. We print in our list "boxing at cost," and on that account would regard the f.o.b. as referring only to cartage.

**John Chatillon & Sons, New York.**—We consider the term f.o.b., as applied to the purchase of goods, to signify that no charge is to be made for cases and cartage.

**Morse Twist Drill and Machine Company, New Bedford, Mass.**—We should consider that the term f.o.b. referred to cartage and freight only.

**Shultz & Hosen, St. Joseph, Mo.**—We understand the term f.o.b. to signify no charge for cases or cartage. However, in some cases the manufacturers have declined to allow the charge for cases under that term.

**John Pritzlaff Hardware Company, Milwaukee, Wis.**—Our understanding of the term f.o.b. is that it applied to the cartage only. We suppose it is a matter of opinion, and have always regarded it in this light.

**Richards & Conover Hardware Company, Kansas City, Mo.**—Refers only to cartage, in our opinion.

**Hazell & Patterson, 87 Walker street, New York.**—It was originally intended to cover cartage only. The generally accepted version of the term at present is that it covers both case and cartage.

**Stanley Rule and Level Company, 29 Chambers street, New York.**—At our factory we put goods aboard cars without charge for drayage. In New York we add the cost to us of drayage. In neither case does it affect cases, which are charged on invoice.

**W. I. & S. G. Negus & Co., 17 Warren street, New York.**—We understand f.o.b. to mean delivered free on board only, or no charge for carting to transportation line.

**Lindsay, Sterritt & Co., Pittsburgh, Pa.**—We understand f.o.b. to signify delivered on cars or boat free of any or all charges.

**Rankins-Snyder Hardware Company, Louisville, Ky.**—We understand the term f.o.b. to refer simply to cartage, and has no reference to price of goods or packing.

**Ott Bros. & Co., Wheeling, West Va.**—When we order f.o.b. we now state "no charge for cases" to avoid any misunderstanding, though we think this precaution should be unnecessary.

**Branford Hardware Company, Nashville, Tenn.**—The term f.o.b., as applied in the purchase of a bill of goods, unquestionably means free of boxes as well as cartage. Where goods are purchased f.o.b. the seller has the right to ship the same in bulk, or loose, provided he guarantees same will reach the purchaser in good order or merchantable condition. If the railroad company, however, declines to so accept them, and insists upon their being boxed, the value of the boxes then becomes a question for settlement between the seller and railroad company only. Should the seller, however, be able to show that the packing of the goods reduced the rate of freight to such an amount as to exceed or equal the cost of the boxes, then it would be but an act of justice to pay the seller for the cost of the boxes. This should be recognized, however, as an act of fairness on the part of the buyer, and not as a legal obligation. The terms for factories to use, it strikes us, are "less cartage" and "freight allowance," and not f.o.b. and the word "delivered." We have had more discussion over the latter word and the meaning than the former.

**Richards & Co., Boston, Mass.**—We do not have in our line many occasions to charge for cases, as most of our goods are shipped in bundles or boxes of tin plates, for which neither the manufacturers nor ourselves make any charge. Our general understanding of the term f.o.b. would not imply a release from charge for cases, if it was customary when f.o.b. was not mentioned to make such charge for cases.

**E. H. Clapp, Boston, Mass.**—I have always understood and practiced during my business experience of some 25 years that the

term f.o.b. simply meant free on board, and that no charge for cartage or drayage could be added to the invoice. I am selling goods in that manner every day, and while delivered free on wharf or depot, I am charging for packages and my customers are paying for same.

**Robinson, Lane & Co., Baltimore, Md.**—We understand goods purchased f.o.b. to be without charges, casing or drayage, except when special arrangement as to charge of boxes is made.

## Coal Market.

The Anthracite Coal trade is quiet, current business being limited very closely to contract deliveries, but inquiries are frequent in reference to future supplies, indicating a renewal of activity later in the season. Operators express themselves well satisfied with the situation and prospects. Prices as a rule are held closely up to the standard quotations, and it is not probable that orders for August shipment would be accepted at the prices now ruling. An advance on or about August 1 is spoken of as a coming event. Despite any stimulus to have been hoped for from this prospect, consumers are still holding off, so far as concerns actual transactions. The heavy movement of Anthracite Coal this year appears from the official statements from the transportation companies showing that, although shipments for the week are only slightly in excess of those of the corresponding week last year—several of the companies having exceeded their percentages in previous weeks—the aggregate mined since January 1 is 16,628,000 tons, against 14,933,000 tons for the corresponding date in 1886, an increase of 1,645,000 tons. This difference is accounted for in the increased tonnage of the Pennsylvania Railroad. Vessels are reported scarce at shipping points; rates unchanged. The recent advance of 25 cents per ton at Western Lake ports causes much complaint.

Quotations: Free Burning White Ash, Broken, \$3.55; Egg, \$3.80; Stove, \$4.15; Chestnut, \$4; Pea, \$3.25. Bituminous continues active, with increasing production; prices for the best grades firm. Quotations are: \$3.50 @ \$3.60 along side in New York.

Advices from the Coke region indicate that the strike is now as far from settlement as ever. The operators, however, are determined to resume operations with new men.

## Imports.

### Hardware, Machinery, &c.

Baur, C. M., Vm. cs., 14  
Bok-r, Carl F., Mdse., cs., 3  
Boker, Hermann & Co., Arms, cs., 30; Mdse., cs., 17  
Bloomfield, J. C. & Co., Machinery, pcs. and pgs., 159  
Calthoun, Robbins & Co., cs., 3  
Downing, R. F. & Co., Ironware, cs., 3  
Dolge, Alfred, Mdse., cs., 12  
Dreyfus, Weiller & Co., cs., 4  
Field, Alfred & Co., Arms, cs., 6; Mdse., cs., 8;  
Hardware, cs., 9, 20  
Folsom, H. & D., Arms, cs., 7  
Graef Cutlery Co., Mdse., cs., 13  
Harley & Graham, Arms, cs., 4  
Jackson, W. H. & Co., Files, cs., 3  
Jennings, A. G., Machinery, cs., 2  
Junze, F. W. & Co., Mdse., cs., 27  
Kaysor & Co., Machinery, cs., 1  
Kluberg, P., Machinery, cs., 3  
Lan, F. H. & Co., Cutlery, cs., 6  
McCoy & Sanders, Hardware and Cutlery, cs., 4  
Merch. Desp. Co., cs., 13; Arms, cs., 6; Machinery, cs., 5  
Moore's Sons, J. P., Arms, cs., 5  
Netherlands S. S. Co., Arms, cs., 14  
Overbridge, A. E., Screw Propeller, 1  
Pim, Forwood & Co., Shovels, bds., 41; Anchors, 12  
Putney, Daniel, Gun-barrels, cs., 19  
Pratt & Farmer, cs., 11  
Schoverling, A., Mdse., cs., 30  
Schoverling, Daly & Gales, Arms, cs., 19  
Schutte, Wm. & Co., cs., 5  
Sumner, C. P. & Co., Machinery, cs., 3  
Wienisch & Hilger, Arms, cs., 36; Hardware, cs., 2, cks., 9  
Witte, John G. & Bro., Arms, cs., 6; Needles, cs., 12; Cutlery, cs., 13  
Wright, Peter & Sons, Guns, cs., 4  
Order: Machinery, pcs., 25

## Latest Legal Decisions.

### CERTIFICATE OF DEPOSIT.

B. deposited in a bank \$1125, and was given therefor a certificate of deposit drawn to his order. He lost the certificate, but it had not been indorsed by him, and the bank refused to pay him unless he gave it a bond of indemnity to secure it against any legal demand by any holder of the certificate. B. then brought suit, and the bank relied in its defense upon its refusal to give the bond of indemnity. In this case on the trial the court directed judgment for the plaintiff, and on the appeal to the Supreme Court of Ohio, the case—*Citizens' National Bank vs. Brown*—the judgment was affirmed. Judge Dickman, in the opinion, said: "In the view which we take of the case before us, it becomes unnecessary to inquire whether the certificate was overdue and payable at the time of its loss, or whether a demand before the loss of the certificate was an essential pre-requisite to the maturity of the instrument in order to determine whether one who should come into possession of it would be subject to the equities that might exist between the bank and the depositor, and whether the bank would be secure in paying the amount of the certificate to the depositor without exacting from him an indemnity. The certificate, though a negotiable instrument, was not negotiable when it was lost by the payee, for it had not been indorsed by him, and under the decision the payee could maintain an action against the bank for the amount of the certificate without delivering to it a bond of indemnity. It has been decided that a promissory note made to the order of A. and lost by him before he had indorsed it is his property, upon which he can sue the maker without giving indemnity, since no one can title to it by a forged indorsement and then be in position to sue the maker; also that where a bill of exchange was lost in its transmission to the payee's agent, to whom

it was indorsed, suit could be maintained upon it by the payee without giving a bond of indemnity, as it could not become a negotiable instrument until it had been indorsed by the agent. It is contended that the words in this certificate, 'payable on return of this certificate,' gave the bank the right to hold the depositor to the letter of the contract, and to refuse payment until the certificate was surrendered or until a sufficient indemnity had been offered. An inability to return the certificate, by reason of its loss, cannot operate as a payment or satisfaction. The maker is not thereby discharged. Having failed to return the certificate, though required to tender an indemnity in cases where the maker would not be safe in paying without such return, he should not be required to go further and indemnify when the certificate was not negotiated at the time of its loss, and its non-delivery to the maker would not subject him to a second payment."

### PROMOTERS OF CORPORATION TAKING STOCK WITHOUT PAYMENT.

B. and C. were the promoters of a corporation, and they sold the stock generally at \$7 a share. They had taken for the corporation certain patents of another company, for which, with the knowledge of the stockholders, they had paid in stock, but they had issued to themselves 3125 shares of stock for which they made no payment whatever. A bill in equity was brought in the United States Circuit Court, District of Massachusetts, to compel B. and C. to pay into the treasury of the company the price at which they had induced the stockholders generally to buy—\$7 a share—for these 3125 shares, and it was reported by the master that they should be required to do so. Exceptions were filed to the master's report on the ground, mainly, that all that could be required of B. and C. was the surrender of this stock, but in deciding the case—*Chandler vs. Bacon*—Judge Colt, in the opinion, said: "As promoters of the company, B. and C. occupied a fiduciary relation toward it similar to that of an agent to a principal, and they had no right in these negotiations to derive any advantage over other stockholders without a full and fair disclosure of the transactions, and any secret profits so made they must refund to the company. That these profits may have been acquired with an intent to defraud cannot relieve these defendants. The law forbids them, from their position, to secretly derive any benefit over other stockholders, and makes them accountable to the company for any profit so derived. I think the company had the right to elect: 1, whether it would have the stock transferred back to it; 2, if the share had been sold to require the payment to it of the proceeds; 3, to say: 'Although you have derived no profit by selling the shares, yet you have derived us of placing them with other persons, and you must therefore pay us the sum we have lost by reason of our being deprived of the right of placing these shares with other persons.' Under this third head, the master justified in charging B. and C. with \$7 a share for the stock, the price which was paid, generally, for the shares upon the solicitation of B. and C."

### PARTNERSHIP.

R. was the heir at law and sole distributee of K., one of the firm of J. K. & Co., and as the wife of K., as administratrix did not compel an accounting by the partnership of K.'s interest, R., as heir at law and the distributee, sued to force an accounting on the ground of collusion between the administratrix and the firm. The answer denied all collusion; and as there was no proof of any such combination, the cause was determined upon the contention by the plaintiff that he could compel an accounting, since the administratrix had failed to do her duty. In this case—*Rosenzweig vs. Tompson*—the plaintiff was defeated, and he appealed to the Court of Appeals of Maryland, where he was again beaten. Judge Miller, in the opinion, said: "The English rule is against the plaintiff's claim. Upon an examination of the authorities," said an able, English master of the rolls, "I believe it will be found that there is no instance of such a suit being maintained in the absence of special circumstances, and that collusion is clearly not the only ground on which such a bill can be supported. The case, I think, may fairly be considered to go to this extent—that such a bill may be supported in all cases where the relation between the executor and the surviving partners is such as to present a substantial impediment to the prosecution by the executor of the rights of the parties interested in the estate against the surviving partners." There is no American authority to the contrary. The abundant protection given here by the bonds of administrator and executor, when necessary, avoids the necessity of any call upon a firm for an accounting.

Mr. William Paulsen, of 10 Burling slip, is the selling agent for the Fleitmann compressed nickel and steel and iron, plates, sheets and wire, the articles being coated by welding, and not by the usual process of plating. The principal claim in behalf of the new articles is their greater resistance to wear in comparison with nickel plated ware. This is especially true of kitchen utensils, tea trays, lamps, reflectors, &c.

Mr. W. C. Quincy, general manager of the Pittsburgh and Lake Erie Railroad, has tendered his resignation, to accept a position with the well-known iron firm of Jones & Laughlins. It is understood that it will be the chief duty of Mr. Quincy to look after the railroad business of Messrs. Jones & Laughlins.

According to dispatches received thus far the meetings of the different mining companies in the Goshute region in which Moore, Benjamin & Co. are interested have approved of the scheme of consolidation.

The circular announcing the programme of the Dalouth meeting of the American Institute of Mining Engineers has been issued. It will commence one day earlier—that is, on July 25th.



## WHOLESALE METAL PRICES, JULY 13, 1887.

## METALS.

**IRON.**—Duty: Bars, 8-10¢ to 11-10¢; provided that no bar iron shall pay a less rate of duty than 35¢. Sheet, 11-10¢ to 15-10¢. Band, 15-10¢ and 30-10¢. 1¢ to 1-10¢. Railroad Bars weigh more than 25 lb. yard, 7-10¢ of 1¢.

## Standard American Pig Iron.

Foundry No. 1 X..... 10.50 @ 21.50  
Foundry No. 2 X..... 10.50 @ 20.50  
Gray Forge..... 10.50 @ 19.00

## No. 1 Scotch Pig Iron.

Carnegie..... 10.50 @ 22.75  
Cottrell..... 10.50 @ 23.50  
Shotts..... 10.50 @ 22.00  
Gangneong..... 10.50 @ 20.50  
Gangneong..... 10.50 @ 20.50  
Langdon..... 10.50 @ 22.00  
Barnum..... 10.50 @ 22.00  
Dallington..... 10.50 @ 21.00  
Kintons..... 10.50 @ 20.50  
Kintons..... 10.50 @ 20.50  
Kintons..... 10.50 @ 20.50

## Rails.

Steel, at Eastern mills..... 10.50 @ 40.00  
Old Rails, 18..... 10.50 @ 22.00

## Scrap.

Wrought, 10 lb. from yard..... 22.50 @ 23.00

## Star Iron from Store.

Common Iron..... 10.50 @ 23.00  
1 to 6 in. 3/4 to 1 in..... 10.50 @ 23.00

Refined Iron..... 10.50 @ 24.00  
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**LEAD.**—Duty: Pig, 2¢ 100 lb.; Old Lead, 2¢ 100 lb.; Pipe and Sheet, 2¢ 100 lb.

Pig..... 4.85 @ 5.50  
Bar..... 4.85 @ 5.50  
Block Tin Pipe..... 15¢ @ 20.50  
Tin Lined Pipe..... 15¢ @ 20.50  
Sheet..... 15¢ @ 20.50  
Shot, 1/2 bag, 25 lb..... 1.40 @ 1.60  
Chilled Shot, 1/2 bag, 25 lb..... 1.40 @ 1.60

**ANTIMONY.**  
Hallett's..... 9¢ @ 10.50  
Cookson..... 9¢ @ 10.50

**SPELTER.**—Duty: Pigs, Bars and Plates, \$1.50 100 lbs.

American, cash..... 47¢ @ 50.00  
Bergenport..... 47¢ @ 50.00

**ZINC.**—Duty: Pig or Block, \$1.50 100 lbs.

Sheet, 24¢ @ 25.00  
600 lb. casks..... 21.00 @ 22.50  
Zinc—Open..... 21.00 @ 22.50  
Zinc Tubing..... 21.00 @ 22.50

**Zinc Tubing.**—Dis. 25¢.

Plain..... 27.00 @ 28.00  
Fancy..... 27.00 @ 28.00  
Scotch and Extra Patterns..... 27.00 @ 28.00

**SABBIT METAL.**  
N. P. U..... 10¢ @ 11.00  
X X..... 10¢ @ 11.00  
J. B..... 10¢ @ 11.00

**WIRE.**  
Market Wire.—Put up in 63 lb. bundles.

Nos. 10 to 12, 13, 14, 15, 16, 17, 18.

10 11 12 13 14 15 16 17 18

Bright Market Wire..... 10.50 @ 11.00  
Bright Market Wire..... 10.50 @ 11.00  
Bright Market Wire..... 10.50 @ 11.00

Chard..... 10.50 @ 11.00  
Chard..... 10.50 @ 11.00  
Chard..... 10.50 @ 11.00

Bale Wire, Nos. 7 to 12..... 10.50 @ 11.00  
Annealed Market Wire..... 10.50 @ 11.00  
Fence Wire, Nos. 8 and 9..... 10.50 @ 11.00

Grape Wire, Nos. 10 to 14..... 10.50 @ 11.00  
Coppered Market Wire..... 10.50 @ 11.00  
Bale Wire, Nos. 7 to 12..... 10.50 @ 11.00

Galvanized Market Wire..... 10.50 @ 11.00  
Fence Wire..... 10.50 @ 11.00

**Stone or Weaving Wire.**  
Nos. 16 17 18 19 20 21 22 23 24 25 26

Cents..... 14 15 16 17 18 19 20 21 22 23 24 25 26

Nos..... 27 28 29 30 31 32 33 34 35 36

Cents..... 28 29 30 31 32 33 34 35 36

Nos. 10 to 12..... 10.50 @ 11.00  
19 to 25..... 10.50 @ 11.00  
27 to 36..... 10.50 @ 11.00

Galvanized Stone Wire..... 10.50 @ 11.00

**Steel Wire.**  
Cast Steel, Steel Wire list..... 10.50 @ 11.00

**Brass and Copper Wire.**  
Old English Gauge the Standard.—Dis. 25¢.

Common High Low Brass Copper.

All Nos. to No. 16..... 10.50 @ 11.00  
Inclusive..... 10.50 @ 11.00  
No. 17 and 18..... 10.50 @ 11.00

19 and 20..... 10.50 @ 11.00  
21..... 10.50 @ 11.00  
22..... 10.50 @ 11.00

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86..... 10.50 @ 11.00  
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## MECHANICAL.

## Petroleum Fuel on the Pennsylvania Railroad.

The widely advertised experiments with petroleum fuel on one of the locomotives of the Pennsylvania road appear to have given very flattering results. The burner which was used is of the type designed by Mr. Urquhart, of the Grazi-Tsartzin Railroad, in Southeastern Russia, where the first successful scheme of using petroleum as fuel, at least on locomotives, was developed. Though on a former occasion we published some of the details of Mr. Urquhart's scheme, we will here repeat that the essential features consist in converting the oil itself into a finely divided state or spray, by means of a jet of steam or compressed air, and then burning this spray in the fire-box of the locomotive, in a fire brick furnace constructed inside the fire box. The burner or spray producer, if it may be so called, is essentially two tubes, one inside the other, the inner tube carrying the jet of steam or compressed air, and the outer tube carrying the oil. The oil tube is prolonged some distance beyond the steam tube, to allow the steam and oil to combine, and then the two together are projected from the end of the oil tube into the fire-box by the force of the steam. A single burner weighing, perhaps, 40 pounds, is sufficient for a locomotive of the largest size. The fire-brick furnace inside the fire-box is very simple in construction, and may be crudely compared to a bonnet, with the open end of the bonnet toward the injector or spray producer. The object of fire-brick is to receive the small particles of oil that escape combustion before they reach the fire-brick bonnet, and break them up so that they may be consumed. The bonnet furnishes, also, a combustion chamber for the proper mixing and burning of the oil and air, and serves another very important service, in that the fire-brick becomes intensely hot and radiates heat to all parts of the fire-box, and at the same time serves to reignite the oil after it has been shut off for a short period from any cause, as stopping at stations.

A representative of the Pennsylvania Railroad visited Mr. Urquhart in Russia last year, and brought home a trial burner and drawings. During his absence the published papers of Mr. Urquhart on the subject became available for use, and this information was turned to account. As the result of these two sources of information, a locomotive was fitted up at the Altoona shops in December last, and has been experimented with more or less since that time. It will be readily understood that the conditions in this country and Russia are somewhat different. American locomotives are worked much harder, and consequently burn more fuel per hour. Moreover, the construction of locomotives is not alike, and it has taken considerable experiment and modification to adapt Mr. Urquhart's plans to American locomotives. These modifications apparently have now all been made, and, according to published reports, a perfectly successful trial trip from Altoona to Pittsburgh and return was made on June 17 and 18. The engine, No. 408, going west, took the mail train, and coming back took the second section of the day express. On the return trip, with a heavy train, the engine made up 25 minutes on schedule time, and in no case did the steam pressure fall below 110 pounds. Most of the time it was just on the verge of lifting the safety-valve 125 pounds. When the pressure did fall to 110 pounds, it was after a long pull on the western slope of the mountain, when both injectors were put on to replenish the water supply, which had become a trifle low during the long pull. The amount of oil consumed during the trip east was 387½ pounds, and during the trip west was 363½ pounds. In both cases considerably less oil was consumed than was thought to be necessary for the trip.

Steam was used as a spraying agent. When the boiler is cold it is customary to first raise the steam by a temporary attachment to a stationary boiler or switching engine, and then create a draft by turning on the blower in the smokestack. A handful of burning waste or shavings is then placed in the combustion chamber, and the steam and oil turned on in succession. The oil immediately ignites, and when this is done the full supply can be given, the combustion being regulated until there is only a thin transparent smoke to be seen at the chimney top.

## New Use of the Electric Light.

According to *Engineering* the use of the electric light for finding the range on board an ironclad at night has recently been suggested. The plan is to place an arc light at each extremity of the ironclad and converge their beams on the distant object. The angles made by the beams with the base line are observed, and a simple trigonometrical formula gives the distance of the object. To facilitate the operation the vessel can be brought round till the angles are equal, or approximately so, and a table can be used to give the result. The incandescent electric light has also been applied recently in the French fleet to signal by night. A string of incandescent lights are hung on the yards of the vessels corresponding, and their lights eclipsed, either according to the Morse telegraphic code of long and short flash signals, or according to the code of marine signals, as the case may be. For the latter combinations ten lamps are required, the current being sent through different numbers of the lamps.

## The Challenge Pipe Vise

A new pipe vise, for which very important claims are made, is being put upon the market by Elger & Elger, 49 Broadway, New York. Two views of the device are presented in the accompanying illustrations. A circular that has been issued contains a number of reasons why the vise is entitled to the special consideration of the trade. Among these we note the following: It has an open top, without hinge or lock. By reason of the open top there can be dropped into the vise-jaws any twisted or jointed pipe, or screw fitting on or off both ends, without removing the pipe or altering the vise. In removing the pipe it is simply

necessary to loosen the jaws and lift the pipe, thus making the device very simple and rapid working. The construction of the article is such that it can be bolted to a bench in three different ways, and also to a post, rafter or floor beam, according to the necessities of use. It can be clamped to an iron post or girder, or, even to the end of a brick wall, and is, accordingly, adapted for use about buildings. It can be fastened to a window sill or door casing when the bench plate is fastened to any object. The mouth of the vise can be placed at a large number of different angles simply by loosening the swivel nut. This is considered a very convenient arrangement for all kinds of pipe-work. The makers also direct attention to the fact that the vise will hold pipe when all the teeth are broken off, and, at the same time, will not crush it. Fig. 2 of the engravings shows the plan upon which the article is constructed. The strength and gripping power are derived

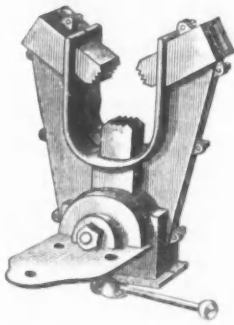


Fig. 1.—General View.

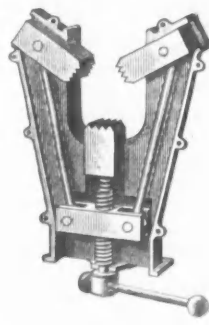


Fig. 2.—Interior Mechanism.

NEW PIPE VISE, MADE BY ELGER &amp; ELGER, NEW YORK.

from a right and left steel screw and connecting rods so arranged as to bring the three jaws in contact with the pipe at the same time. Fig. 1 shows the external appearance of the vise and the provisions that are made for putting in position for use. The makers inform us that in the manufacture of this article the parts are made interchangeable and are numbered, and will be furnished on order as repairs are necessary, it simply being required to give the size of the vise and the number of piece needed. Two sizes of vise are manufactured—one adapted for general use of gas and steam fitters and the other for different lines of trade where large pipe is employed.

## Proportions of Locomotive Cylinders.

A report of special interest submitted at the late meeting of the American Railway Master Mechanics' Association was that on the proportions of locomotive cylinders. Circulars embodying questions bearing on the subject had been printed and distributed, and, in addition, a few copies were forwarded to locomotive superintendents of Great Britain. Communications in reply to the circular were received from the following gentlemen: Mr. J. D. Barnett, of the Grand Trunk Railway; Mr. J. McGrayel, of the Des Moines and Fort Dodge Railroad; Mr. James Meehan, of the Cincinnati, New Orleans and Texas Pacific Railway; Mr. Angus Sinclair, of the National Car and Locomotive Builder; Mr. Thomas B. Twombly, of the Chicago, Rock Island and Pacific Railroad; Mr. S. G. G. Copestake, of the Glasgow Locomotive Works, Scotland, and from Mr. F. W. Webb, of the London and Northwestern Railway, England.

To illustrate the difference in cylinder dimensions, when calculated by the various rules recommended by the gentlemen who have expressed their views on the subject, the following figures are of interest:

Data.	Passenger engine.	Stroke of piston, 26 inches.	Mean diameter of driving wheels, 61 inches.	Weight on drivers, 60,000 pounds.	Boiler pressure, 160 pounds.
Barnett.	$\sqrt{\frac{60,000}{5} \times 61}$				
	$134 \times 36$				
					14.5 in. diameter of cylinder.
McGrayel.	$\sqrt{\frac{60,000}{6} \times 61}$				
	$85 \times 36$				16.6 in. diameter of cylinder.
Meehan.	$\sqrt{\frac{60,000}{6.17} \times 61}$				
	$90 \times 36$				16.2 in. diameter of cylinder.
Twombly.	$\sqrt{\frac{60,000}{2000} \times 5 \times 198}$				
	$4 \times 36$				16.9 in. diam. of cylinder.
Copestake.	$\sqrt{\frac{60,000}{5} \times 63}$				
	$101 \times 36$				16.9 in. diameter of cylinder.
Webb.	$\sqrt{\frac{60,000}{5} \times 63}$				
	$101 \times 36$				15.67 in. diameter of cylinder.
Proposed rule.	$\sqrt{\frac{60,000}{4} \times 61}$				
	$136 \times 36$				16.1 in. diameter of cylinder.

In the consideration of this subject, says the committee, one has to deal with two indefinite quantities—namely, the mean effective steam pressure in the cylinders, and the coefficient of adhesion, and both of these have to be assumed before any calculation can be proceeded with. The first or mean effective cylinder pressure is, of course, primarily governed by the boiler pressure, and is secondarily subject to alteration by point of cut-off and speed—it is assumed that the engine is worked with the throttle wide open, and that the steam passages are of proper dimensions, otherwise the pressure will be influenced by these causes. Few railways are free from grades which necessitate engines being worked to a greater or less extent nearly up to their ultimate capacity, and in the event of starting on such grades, as well as from stations generally, of being worked full power; hence it appears proper that the mean effective cylinder pressure should be placed sufficiently high to cover such cases, and your committee are of opinion that 85 per cent. of the boiler pressure be considered the M. E. C. P. in the formula.

The second indefinite quantity, or the

efficient of adhesion varies as the condition of the surface of the rail changes, and, according to Molesworth, from  $\frac{1}{3.7}$  to  $\frac{1}{11.2}$  the former being due to a perfectly clean and dry rail; the latter to a slightly moistened or frosted rail. In different parts of the world it is doubtless possible to find places where the average coefficients for the year will vary to such an extent as to warrant special allowance being made to suit the circumstances, but in the United States it may be safely stated that exceptional climatic peculiarities sufficient to justify any material deviation from a standard rule do not exist.

As passenger engines are worked so as to produce a M. E. C. P. of 85 per cent. of the boiler pressure, for a very limited fraction of their total mileage, it would appear not improper to use the coefficient one-fourth, or that due to a dry rail, for calculating the proportions of passenger engines. Freight

engines being worked to their ultimate capacity to a very much greater extent than passenger engines, it would be consistent to increase the coefficient to say  $\frac{1}{4.25}$ ; and in the case of switching engines, generally worked full stroke, a coefficient of  $\frac{1}{4.5}$  would be required to obviate the excessive use of sand, to prevent slipping on the more or less greasy rail generally encountered in yards where this class of engine is employed. Investigation shows that among engines of recent construction very great variations in their relative tractive power and adhesive weight exist. In the case of American passenger engines, and using the formula recommended by your committee, it is found that the N. Y., L. E. & W. Mogul engine built by the Baldwin Company has an excess of adhesive weight of 26,600 pounds, or 38.7 per cent. The eight-wheeled engine built by the Mason Works shows an excess of over 12,400 pounds, or 22.3 per cent., while the Lake Shore and Old Colony eight-wheeled engines are deficient in the same respect to the extent of 6500 pounds, or 9.2 and 9.5 per cent. respectively. Among foreign passenger engines the Belgian State locomotive has an excess of adhesive weight of over 20,000 pounds, or about 46.5 per cent.; the New South Wales Mogul, an excess of nearly 16,000 pounds, or 25.2 per cent., while the Great Northern express engines, with 91½ inch driving wheels, are deficient to the extent of 12,600 pounds, or over 24.8 per cent. Among freight engines of American build the variations are not so great. The Union Pacific Wooten consolidation engine has an excess of 18,900 pounds, or 21.8 per cent.; the Baltimore and Ohio Mogul an excess of 12,500 pounds, or 16.7 per cent., while the Baldwin Decapod shows a deficiency of 18,300 pounds, or 12.5 per cent. Of foreign freight locomotives, the six-wheeled coupled engine of the Great Eastern Railway has an excess of 16,200 pounds, or 24.6 per cent., while the Dubs consolidated engine, built for Brazil, has a deficiency of 14,900 pounds, or nearly 14.3 per cent. Of switching engines, the Brooks six-wheeled switcher has a deficiency of 13,900 pounds, or 17.4 per cent.

Your committee recommend, for general purposes, the use of the following formula:

$$D^2 \times S \times P \times 0.85 \times C = W$$

$D$  = Diameter over tires when half worn.  
 $d$  = Diameter of cylinder.  
 $S$  = Stroke of piston.  
 $P$  = Boiler pressure.  
 $W$  = Weight on driving wheels.

$C$  = Co-efficient for adhesion.  
1.4 for passenger engines.  
1.45 for freight engines.  
1.45 for switching engines.

Should extreme economy in fuel and water consumption be considered imperative and of greater importance than additional cost of superheaters and steam jacketed cylinders, and maintenance of same, a considerable increase of cylinder power would be admissible, so as to allow the average work to be performed with a correspondingly earlier cut-off, and greater ratio of expansion. The unsatisfactory results, however, obtained with the ordinary link motion from the wire drawing of steam, when cut off much earlier than at 25 per cent. of the stroke, point to the desirability of using some other type of valve motion, when the extreme practice above referred to is contemplated.

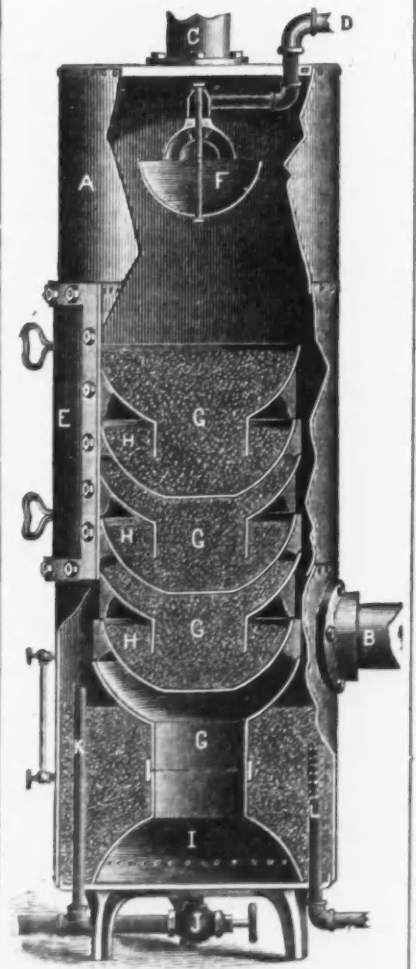
## Manhole Gaskets for Boilers.

The choice of material for manhole gaskets, says the *Locomotive*, cannot be too carefully made. The material should be yielding, elastic, tough, and these qualities should not be very much affected by the temperature of steam at ordinary pressures. It should be yielding, because this property enables it to adapt itself to any trifling inequalities of the seat or surface of the plate, thereby insuring a tight joint with a minimum of trouble. It should be elastic, to enable the gasket to accommodate itself to slightly different sizes and shapes of manholes of the same nominal size. It should be tough and strong, as this is most important to prevent serious accident, and if it is affected but slightly by a temperature of, say, 350° F., a gasket may, if care be exercised, be used repeatedly, which is quite an im-

## A New Feed-Water Heater.

We show in the accompanying engraving a vertical section of a new feed-water heater, filter and lime extractor, built by Messrs. E. W. Poorman & Co., of Canton, Ohio. It consists essentially of an upright iron cylinder, A, into which the steam from the engine is exhausted, and which is fitted with a series of filtering bowls through which the water passes in its travel from the top to the bottom of the heater. Connection is made at B with the exhaust pipe from the engine; the outlet C for the exhaust from the heater of the uncondensed steam is of the same size as the inlet pipe B. These steam passages are of such size that it is impossible to create any back pressure upon the engine; on the contrary, the partial condensation of the exhaust steam tends to relieve the engine of back pressure. The cold water is brought by the pipe D into the top of the heater, the supply being regulated by a stop-cock at the end of the cold water pipe. Inside the heater is fastened a bowl or overflow, F. The water fills this bowl and flows over its edges in a thin sheet, falling through the incoming current of steam into the upper funnel G. The steam passing through a thin sheet of water dashes it into fine spray, acting upon each separate particle, imparting sufficient heat to raise it to the boiling point, which sets free the lime and some other impurities held in solution. The water now traverses a large area of heating and depositing surface, arranged in the form of removable funnels G and bowls H, placed alternately, as thin sheets of water pass over them, all of which are very hot, and in its descent from bowl to bowl passes through a bed of coke, filtering it in its downward course; the water passing downward through the coke in the funnels and upward through the coke in the bowls.

It will be observed that the construction of the heater is such that not a drop of water can pass down through it without



Combined Feed-Water Heater and Filter, Built by E. W. Poorman &amp; Company, Canton, Ohio.

being thoroughly boiled and purified. The lime, magnesia, and other impurities, which the process of boiling sets free from the water, are deposited upon the entire series of bowls and funnels and coke filling; the deposits being the heaviest on the top funnels and bowls. From the lowest bowl the water passes downward through the lower inverted funnel I, into the mud well at the bottom of the heater, where the mud, sand, and other particles of sediment are deposited, which may be drawn off through an opening in the bottom of the heater. The purification of the water is now completed by its passage from the mud well upward through the coke filtering to its final exit from the heater, freeing it of all its scale-producing substances, and supplying it to the boiler pure and at a relatively very high temperature. The heater is made in six sizes, varying from 20 to 45 inches in diameter, and from 5 to 7 feet in height.

## Steam Pressure in Locomotive Boilers.

In speaking of the desirability of increasing the steam pressure on locomotives, Mr. Lauder, at the recent meeting of the American Railway Master Mechanics' Association, said:

"There is a feeling among the progressive engineers, both locomotive, marine, and stationary, that we should carry higher pressure. This has come about largely by the enormous reduction of expense in operating marine engines where the cylinders have been compounded. To do that economically you must start with high pressure. How far that principle can be carried out is an open question. There are good arguments for it and some against it. I do not believe it is economy to cut off steam on a 24 inch stroke cylinder, shorter than 6 inches with the ordinary valve motion. We have gone along for years at about 140 pounds. A good many have got up to 150; a few have got more than that. Mr. Underhill has been carrying 160 pounds with it, it is claimed, good results. Mr. Stevens, of the Lake Shore, has put to work passenger engines carrying 180 pounds. I have got up to 175, and, I think, with good results. The fact is, the transportation department is calling on us every day for greater duty from our engines. Cars are built heavier and we are expected to haul more tonnage than a few years ago—the tendency seems to be in that direction. The consequence is we have had to increase our engines. We have them now up to the maximum weight and size. It is impracticable, it seems to me to get much above the weights we have now on our heavy passenger and freight engines. The question is how to get more power without increasing the weight. Some say the power of passenger engines is dependent on their adhesion. That is true to some extent, but there is very little difficulty from the slipping. The power of a passenger locomotive is just her capacity to make steam. She has adhesion enough. I am speaking of a good modern engine. There are very few engines that will hold steam while cutting off over 10 inches. If you can get a boiler in the engine that will carry higher pressure you have got the engine. In my own practice one of the engines that is carrying 175 pounds of steam is pulling our boat train. It is composed of 16 cars, 11 being 60 feet long. We never have had an engine on that train that would make the steam to pull that train over in proper shape until these engines were put on. These engines have a large boiler—nearly 1500 feet of heating surfaces—that enables them to make steam freely. When we strike a heavy pull we cannot have engines that will go down, down, down to 100 or 80 pounds. I claim a boiler can be designed to carry 200 pounds of steam as safe as one that can be built to carry 100 pounds."

## The Present Status of Wheeling Industries.

The Bellaire Nail Works, at Bellaire, Ohio, have been running their Bessemer steel works steadily, and its blast furnace and nail factory has been regularly employed, the concern paying the advanced rate for coke and keeping in the market. The company, at a stockholders' meeting on the 25th ult., declared a stock dividend of 5 per cent., thus capitalizing the former bonded debt, and paid besides a 5 per cent. cash dividend, being money made by keeping running all through the great nailers' strike which ended last year.

The Riverside Iron Works, at Wheeling, has been idle for some weeks, the furnace being banked, with no coke or iron in stock. The company are pushing the construction of its pipe mill with all possible speed, and it is hoped that the butt-weld section will be in operation in the latter part of August.

The tap mill of the Wheeling Iron and Nail Company, at Wheeling, have their furnace banked, and the nail factory is running only an occasional day, in order to keep up the assortment of stock. The puddle mill is running only spasmodically.

The nail mill of the Benwood Iron Works, of Wheeling, is idle, and the furnace at Martin's Ferry is banked. The puddle mill has been making fair time until the end of June, but is now closed down indefinitely.

The La Belle Iron Works at Wheeling is running right along, the steel being furnished by the Wheeling Steel Works, which is jointly controlled by the Belmont, Benwood, and Tap mills. It is stated that the steel slabs are being delivered at \$30, while pig iron costs \$2.30.

The Belmont Nail Company are getting their blast furnace into shape, and may blow in on August 1. It is believed that when the coke strike is over, this and the two other works interested in the Wheeling Steel Company will run full. The latter made a run of 10 days in the latter part of June, when the supply of coke and pig iron was worked up. They will start again at an early date, if indeed they have not again begun to make steel by the time our report reaches our readers.

The Junction Iron Company, with their works at Mingo, Ohio, and the Jefferson Iron Works at Steubenville, Ohio, are running as steadily as the hot weather will admit of.

Another electric railroad is about to commence running, to be known as the Jersey City and Bergen Railroad. The tests thus far on heavy grades have been satisfactory. A series of electric cells placed under the car seats feeds batteries underneath the car. Three wheels are connected with the latter contrivance, two flanged or rail wheels, and a center wheel which is flangeless. The rail wheels are charged with electricity, and are connected by a bolt. The power is distributed by a small gear wheel, which makes 500 revolutions in harmony with a larger one of 250 revolutions, which in turn is connected with the friction or center wheel, which makes 50 revolutions. With 30 cells the car can be driven 100 miles an hour, or as much slower as desired. The batteries will run it 15 hours and do the work of 12 horses.



# Trade Report.

## NEW YORK.

**American Pig.**—Sales are growing more numerous, and, while the majority of transactions are for early delivery, some contracts are being closed for larger quantities up to the closing of navigation. The demand, such as it is, comes from all classes of consumers. No. 1 Foundry is scarce, and occasionally commands fancy prices. No. 2 is more plentiful, and we note a sale of 1000 tons of Macungie of this grade at private terms. The greater number of the Southern furnaces are practically out of this market for the present. Standard brands remain \$21 @ \$21.50 for No. 1 Foundry, \$19.50 @ \$20.50 for No. 2 Foundry, and \$17.50 @ \$18.25 for Gray Forge, with outside brands available at 50¢ @ \$1 less. We print elsewhere our semi-annual review.

**Scotch Pig.**—There is a fair amount of activity, sales aggregating about 1000 tons per week. We quote: Coltness, \$22 @ \$22.50; Glengarnock, \$20.50 @ \$20.75; Shotts, \$21.50 @ \$21.75; Gartsherrie, \$21 @ \$21.25; Carnbroe, \$20.75 @ \$21; Summerlee, \$21.50 @ \$21.75; Dalmeilington, \$20.25 @ \$20.75, and Eglington, \$19.75 @ \$20.

**Spiegelisen.**—We note a sale at private terms of the product of a domestic Spiegel furnace for the balance of the year at the rate of about 500 tons a month. English Spiegelisen is offered at \$27, while German is nominally \$26.50 @ \$27.

**Bessemer Pig.**—Low offerings of foreign have been made lately for large blocks for delivery during the latter part of this year and early in 1888. There are some inquiries in the market. We quote foreign nominally \$19.50 @ \$20.

**Bar Iron.**—We quote Common, 1.8¢ @ 1.9¢; Medium, 1.9¢ @ 1.95¢; and Refined, 1.95¢ @ 2.25¢, on dock.

**Structural Iron.**—We quote for large quantities: Angles, 2.30¢ @ 2.40¢; Tees, 2.70¢ @ 2.75¢; and Channels and Beams, 3.30¢, base on dock.

**Plates.**—Our statements in our issue of June 30 appear to have been misunderstood as implying that makers of Plates for Government purposes had attempted to place material once rejected in fulfillment of such contracts. That construction of our report is entirely erroneous. The makers simply sold what the Government inspectors themselves admit to be very excellent material for other purposes. The Plate mills are again in better shape, a number of heavy contracts, estimated at 10,000 tons, having been placed during the last 30 days. We quote for round lots of Common or Tank, 2.35¢ @ 2.50¢; Refined, 2.50¢ @ 2.60¢; Shell, 2.6¢ @ 2.8¢; and Flange, 3.5¢ @ 3.8¢; Extra Flange, 4.25¢ @ 4.50¢. For Steel Plates quotations are as follows: Tank, 2.6¢ @ 2.9¢; Ship, 2.9¢ @ 3¢; Shell, 2.9¢ @ 3.15¢; Flange, 3.15¢ @ 3.50¢, and Fire-Box, 3.75¢ @ 4¢, on dock.

**Billets.**—A number of sales of small lots aggregating a few thousand tons are reported, chiefly for the West. We quote \$30 @ \$30.50.

**Wire Rods.**—There is considerable inquiry, aggregating about 10,000 tons, for delivery up to the close of navigation. We quote \$38.50 @ \$39.

**Steel Rails.**—We note sales by Eastern works aggregating fully 25,000 tons during the past week, including one lot of 10,000 tons for a road in Illinois for October delivery, and one re-sale of 2500 tons, August delivery. For early delivery \$38.50 @ \$38.75 is being paid, for later work, \$38 @ \$38.50, and for late fall and winter, \$38 is shaded. There are a few large inquiries in the market, among them one for 15,000 tons for an Illinois road. It is estimated that the sales for 1887 to date are not less than 1,500,000 gross tons, against 1,614,545 gross tons reported June 1. A meeting of the Steel Rail manufacturers will be held at Long Branch early in August.

**Old Rails.**—Consumers decline to purchase at the prices at which Old Rails are now being held, and not a single sale to that class is reported during the current week. Consumers state that until better prices for Manufactured Iron are realized they will be unable to pay the figures demanded for Old Rails, and will turn to other stock which is now relatively cheaper. We note a sale of 2000 tons of American Tees, at a point in the Hudson River, on private terms. There has also been a forced sale of 300 tons of Foreign Doubles on dock at \$22. Bids were asked for this lot, with the understanding that the best offer would be accepted. Their are peculiar circumstances about this transaction, which rob it of all significance as indicating the state of the market. Holders are generally firm. We quote nominally \$23 @ \$23.50 for Tees, and \$24 @ \$25 for Doubles.

**Scrap.**—The market is dull, with Yard Scrap nominally \$20.50 @ \$21.50.

**Railroad Fastenings.**—Spikes are quoted 2.40¢ @ 2.50¢ net; Angle Fish Bars, 2.1¢ @ 2.25¢; Steel Angle Bars, \$2.20 @ \$2.30; Bolts and Nuts 3¢ @ 3.20¢, and Bolts and Hexagon Nuts 3.2¢ @ 3.30¢.

Messrs. Henry Levis & Co., of Philadelphia, have been appointed agents of the Springfield Iron Company, of Springfield, Ill. Mr. F. G. Gorbam, long connected with the Troy Iron and Steel Company, will be the representative in this city of both Messrs. Henry Levis & Co. and the Springfield Iron Company.

## Metal Market.

**Copper.**—Since our last report the demand for Copper has daily increased, with no little excitement on the part of those who have all along expected to see the metal lower. Perceiving their mistake, however, buyers entered the market with great spirit, and some 400,000 to 500,000 pounds of Lake Copper were rapidly taken out of the market at from 10.35¢ to 10.50¢ spot; 10.55¢ to 10.65¢ September, and 10.70¢ October and November. At the close the highest prices remain bid. For a large line December 10.80¢ has been refused. At Boston 200,000 pounds Franklin were sold ex-dock at 10.40¢ on Saturday. It is questionable whether 11¢ will stop the advance, now that the ball has been set rolling. Meanwhile, the Orford Company, which have been producing about 4,000,000 pounds annually from American Matte, &c., and as much from Canadian ores, have suspended; but an arrangement with their creditors is said to be pending. The decline in Chili Bars in London may have been due to some sales for account of this company. At any rate, but a small trade was done at the decline, and there is a recovery since. On July 7 the price was £39 12/6; July 8, £39 10/; July 11 and 12, £39 12/6, and this morning £39 17/6, while Best Selected gave way from £45. 5/ to £45. The import of American Copper into Liverpool and South Wales during the first six months has been 4661 tons fine, against 7383 last year, and 13,271 in 1885. The export of Domestic Ingot Copper from the United States during the first 11 months of fiscal year has been 17,240,296 pounds, against 22,863,606 in 1886.

**Tin.**—There has been a strong, gradually advancing market, both in London and here, with prospects of a still further considerable rise before us. Spot Tin is still scarce here, and has been sold at 23.35¢ @ 22.40¢ on the spot, and ex-dock just arrived at 23¢ and 23.05¢, and back again to 23¢, for July delivery; at 22.90¢ @ 22.85¢ for August, and 22.75¢ @ 22.80¢ for September. Transactions for the week sum up fully 250 to 300 tons. The outlook is highly favorable at the close; London also closing strong at £104. 5/ spot, with buyers thereat, and £104 futures. Net import of Tin into the United States during the first 11 months of fiscal year, 12,708 tons, against 11,574 in 1886. **Tin Plates.**—The terribly prolonged drought in Wales causes great inconvenience, the water being shut off because wanted by the people at large, and causing some works to shut down already. But this interference will cease and there will be plates enough when the dry spell ends. Liverpool is strong at 13/6 Coke, Terns being particularly firmly held. In this market the demand has not been very active, but last week's quotations are fully maintained. We quote as heretofore, box, large lines: Siemens-Martin Steel, Charcoal Finish, \$4.75 @ \$5; ditto Coke Finish, \$4.65 @ \$4.70; Charcoal Terns, \$4.30 @ \$4.50, and Coke Tin, \$4.37¢ @ \$4.50. Net import of Tin Plates into the United States during the first 11 months of fiscal year, 228,267 tons, against 225,909 in 1886.

**Lead.**—A listless state of affairs has prevailed, with hardly anything doing except in a jobbing way at \$4.45, buyers being unwilling to pay for large lines over \$4.40, but if anybody entered the market for them \$4.50 would probably have to be paid. Refined is held at \$4.50. St. Louis is nominally \$4.27½ @ \$4.30, but over \$4.25 could not be got. In London Soft Spanish is worth £11. 15/, against £11. 17/6 last week, and English Pig also declined 2/6 to £12.

**Spelter and Zinc.**—A moderate business has been transacting at \$4.55 @ \$4.60 for Common Domestic, while Silesian may be quoted \$4.80 nominally, being unaltered at £14. 12/6 in London. We quote Bertha Refined 8¢. Sheet Zinc is, considering the season, selling very well at 6¼¢ @ 6¾¢, Domestic.

**Antimony.**—Hallet rose to £35 in London, and sells here at 8¼¢ @ 8½¢, with a fair demand, and Cookson at 9¼¢ @ 9½¢.

## New York Metal Exchange.

The following sales are reported:

THURSDAY, July 7.	
20 tons Tin, July.....	22.90¢
20 tons Tin, August.....	22.80¢
25,000 lb Lake Copper, cash.....	10.25¢
25,000 lb Lake Copper, July.....	10.25¢
FRIDAY, July 8.	
20 tons Tin, July.....	22.90¢
10 tons Tin, September.....	22.70¢
10 tons Tin, July.....	22.90¢
40 tons Tin, September.....	22.75¢
20 tons Tin, July.....	22.90¢
SATURDAY, July 9.	
10 tons Tin, July.....	23.¢
10 tons Tin, August.....	22.90¢
20 tons Tin, September.....	22.80¢
MONDAY, July 11.	
10 tons Tin, July.....	23.00¢
25,000 lb Lake Copper, last half September.....	10.25¢
TUESDAY, July 12.	
20 tons Tin, July.....	22.90¢
10 tons Tin, September.....	22.75¢

## Philadelphia.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, July 13, 1887.

**Fig Iron.**—The demand is not particularly urgent, but is nevertheless sufficient to keep stocks within narrow limits, and at firm quotations. It would not be difficult to secure an advance in prices, if makers were so inclined, but the fear of foreign competition, as well as the danger of too large a production in this country, admonishes them not to put prices too high. Mill Irons are relatively below their value, and a slight advance in these would not be out of place, but Foundry Irons are too near the price of Scotch to permit anything of that kind unless they lead off on the other side. The conditions as indicated in last week's articles in The Iron Age are unusually favorable, which subsequent events have more than confirmed. All branches will be running full after this week, some, in fact, will be uncomfortably full, while purchases made during the past three or four days indicate a revival of demand for Skelp Iron, which was a leading element of strength during the first three months of the year. The demand for Pig Metal, therefore, may be considered secure beyond question, and as stocks are light, there is not much danger of accumulation during 1887, at all events. Still, the margin for profit is very small, so that both producer and consumer are working very cautiously; in fact, business was never done closer or more carefully than it is now, hence, while no one looks for much of a rise in prices, there are still fewer who expect any decline. Under these circumstances there is no inducement to produce beyond what is actually required for consumption, or to buy in advance, expecting either scarcity or higher prices. Prices to day are firmer than they were last week or the week previous, and are in some cases a little dearer. Mill Irons are quoted at \$18 delivered at tide; a good deal of business was done at \$17.50, but it would be hard to place an order to-day at less than \$18. Foundry Irons are firm at \$21 @ \$21.50 at tide for No. 1 (\$22 for choice brands,) and \$19 @ \$19.50 for No. 2. Inquiries are good showing a desire to buy, while the supply is only very moderate, enabling sellers to easily maintain prices.

**Foreign Iron.**—There is little or nothing to report in either Bessemer or Spiegel, which are quoted c.i.f. duty paid, \$20.50 and \$27 respectively. Bids of \$20 have been made for special brands of Bessemer, but not taken.

**Blooms.**—There is more inquiry for Steel Blooms and Slabs, but makers abroad have their order books pretty well filled, and are not taking business at prices offered in this market. Asking prices are about as follows: Rail Blooms, \$30 @ \$31; Nail Slabs, \$30 @ \$31; Sheet-Iron Billets, \$32 @ \$34; Charcoal Blooms, \$53 @ \$54; Runout Anthracite, \$45 @ \$46; Scrap Blooms, \$38 @ \$39 ½ "bloom" ton.

**Muck Bars.**—There is a fair demand, but prices seem to vary a good deal. Some quote \$32 at mill, while others are free sellers at \$31 @ \$31.50, although the difference in freights sometimes absorb almost the entire difference.

**Bar Iron.**—There is a better feeling in this department, and those who have to buy have no alternative but to pay more money. There is nothing specially heavy on the market, but enough business has accumulated to give the mills a good start, and those who come in later will have to advance their bids. Consumption is going to be very heavy, and, as there seems to be an absolute certainty of plenty of business, manufacturers are trying to get back to 2.1 as a firm quotation—in fact, some have been getting that price during the past week for good sized orders. Plenty of business could be had at last month's prices, but there is no anxiety to fill up beyond what is already secured, unless prices are made satisfactory. Another good feature is in the renewal of demand for Skelp Iron. Sales of good sized lots have been made at about 2¢, and as other contracts are pending, it is not unlikely that sellers will ask a little more, although orders of this class are considered very desirable. Large sales of Skelp Iron have been made, including about 1000 tons of Grooved at 2¢, delivered, and 1000 tons of Sheared at 2.15¢ at mill.

**Plate and Tank Iron.**—The same general features may be noted in this department as in Bar Iron. There is quite an accumulation of orders, and with a considerable amount of new business in sight prices are firmer, and, in fact, it would be difficult to place orders without paying advances of more or less importance. Prospects are entirely satisfactory to manufacturers, full employment and improving prices being strongly indicated. Prices about as follows: Ordinary Plate, delivered, 2.25¢ @ 2.30¢; Tank, 2.35¢ @ 2.40¢; Shell, 2.6¢ @ 2.7¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank, 2.8¢; Shell, 3¢ @ 3.2¢; Flange, 3.3¢ @ 3.4¢; Fire-Box, 3¼¢ @ 4¢.

**Structural Iron.**—There is not much new business to report, but as the amount under contract is very large temporary dullness is hardly noticed. Prospects are very good, however, and there is not the slightest reason to doubt that the mills will have all they can do during the balance of the year. Prices are firm and may be quoted about as follows: 2.4¢ @ 2.5¢ for Bridge

Plate; 2.30¢ @ 2.35¢ for Angles; 2.8¢ @ 2.9¢ for Tees, and 3.3¢ for Beams and Channels.

**Sheet Iron.**—There is a decided improvement in the demand, and it seems as though all the Sheets that can be made will be wanted. Prices are firm, and in some cases a little dearer, although as a rule the best makes are quoted about as follows: Best Refined, Nos. 26, 27 and 28..... 3¼¢ Best Refined, Nos. 18 to 25..... 3¼¢ Common, 4¢ less than the above. Best Bloom Sheets, Nos. 26 to 28..... 4¼¢ @ 4½¢ Best Bloom Sheets, Nos. 22 to 25..... 4 @ 4¼¢ Best Bloom Sheets, Nos. 16 to 21..... 3¼¢ @ 3½¢ Blue Annealed..... 2.8¢ @ 3¢ Best Bloom, Galvanized, discount..... 60 ¢ Common discount..... 65 ¢

**Steel Rails.**—There is not much change to report, as mills are full of work until fall, and buyers for later deliveries are not prepared to pay the prices asked, say, \$38.50 @ \$39 for winter work, and \$39.50 @ \$40 for summer and fall, although some sales are made at the rates above named. Prospects are very encouraging, however, and sellers express a good deal of confidence in the market at present prices.

**Old Rails.**—Not a great amount of actual business to report, and buyers are inclined to deprecate the advance that holders are asking. At the same time we are informed on good authority that bids have been cabled at \$23 for T's, and \$23.75 for Bridges, with best counter offers at \$23.75 and \$24.50 respectively. Store lots are held at \$25, so that quotations are altogether nominal. One 400-ton lot mixed Rails sold here at \$22.50 ex-ship, which is the only transaction reported. Under light offerings the market may be called firm, with an advancing tendency.

**Scrap Iron.**—Demand improving and sales readily made at about the following quotations: Cargoes of No. 1 Scrap, \$21 @ \$22; small lots, tide-water delivery, \$22 @ \$23; Selected do., \$23; No. 2 do., \$16 @ \$17; Turnings, \$15 @ \$16; Old Car-Wheels, \$17.50 @ \$18.50; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$16 @ \$17; do. Borings, \$12 @ \$13; Old Fish Plates, \$26 @ \$27.

**Wrought-Iron Pipe.**—A fair demand prevails, and prices are somewhat stronger, on account of the scarcity caused by the general shutting down of the various mills. Discounts are as follows: Lap-Welded Black, 50%; Lap-Welded Galvanized, 32½%; Butt-Welded Black, 32½%; Butt-Welded Galvanized, 22½%; Boiler Tubes, 42½%.

**Nails.**—Have recovered somewhat, and lots from store are quoted at from \$2.15 to \$2.25. There is but little doing, however, and until demand strengthens we can hardly look for any improvement in price.

## Chicago.

Office of The Iron Age, 95 and 97 Washington St., CHICAGO, July 11, 1887.

**Pig Iron.**—The situation in this market is now precisely what has been foreshadowed for the past two or three weeks. There is a very active demand, with large sales and increasing inquiries. As usual, when the demand increases, the supply becomes more limited. Lake Superior Charcoal is reported to be quite scarce. The supply of Coke Iron is restricted in the North by the Coke strike, and in the South by the withdrawal of a large number of furnace companies from this market. The Southern furnace companies who have withdrawn are not even offering their low-grade Iron. Of Blackband Coke Softeners there is practically none to be had, the few furnaces that are still in blast on this kind of Iron being sold up as far as they care to book orders. The effect of the restriction of the production of Coke Iron promises to be much greater than has hitherto been realized. Some of the Bessemer Steel companies will have to come into the market for supplies of Pig Iron in a very short time. The demand from this source, which will be heavy, will come upon an already crowded market, and it is difficult to determine what the result may be. The danger now is that holders of Pig Iron will think the conditions are favorable for a squeeze, and will therefore hold out for higher prices. It would be well if a movement of this kind could be discouraged and values held about where they are, as it is very likely that these prices could be maintained for the balance of the year, even if the Coke strike were soon to terminate. A much higher range of values, however, would be sure to be followed by a slump as soon as a large number of furnaces now idle get in blast, and this would have a disheartening effect on the Iron trade generally. Although part of the buying of last week came from the manufacturers of Agricultural Implements, they can hardly be said to be fairly in the market as yet, so that increased buying is looked for in the near future. As might be expected, prices have been slightly modified during the week, and are now on the up grade. Quotations are as follows for cash, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2 and 3, \$23.50 @ \$24; Southern Cold Blast Charcoal, \$27; Hanging Rock and Jackson County Softeners, \$22.50; Straight Coke Foundry, No. 1, \$22.50 @ \$23; No. 2, \$21.50; No. 3, \$20.50; Coke Bessemer, run of furnace, \$22.50; Southern Coke, No. 1, \$22; No. 2, \$20.50 @ \$21; No. 3, \$20.50; Virginia Coke, No. 1, \$22.50; No. 2, \$21.50.

**Bar Iron.**—The mills which have been competing most sharply for orders seem to have filled up, and prices are firmer under an increased demand from a variety

of manufacturers and the increased cost since the adoption of the new wages scale. Some of the Agricultural Implement manufacturers have placed orders of considerable size, and the prospects are excellent for even better trade in the next month or two. Common Bars, not guaranteed, are now held at about 1.95¢, rates in carload lots, f.o.b. Chicago. Good Bars are quoted at about 2.10¢, same delivery. Store prices are still 2.15¢ @ 2.20¢ for Common, and 2.20¢ @ 2.30¢ for Good Bars.

**Structural Iron.**—Manufacturers' agents report it easier to get orders than to secure the material with which to fill them. Western mills are closed down temporarily, and Eastern mills are so full of orders that they are declining to take any more for immediate delivery. Prices remain about the same as before: Angles, 2.60¢ in carload lots, f.o.b. Chicago, and Tees, 2.90¢, same delivery.

**Plates.**—Dealers report a very good week. A number of good sized mill orders have been placed, including a considerable quantity of Steel Plates. Store sales have also been very good. Prices continue the same as previously reported, but are hardening, and it is expected that they will certainly be advanced at an early day.

**Wrought-Iron Pipe.**—Prices are a little stiffer, as is shown by the failure of buyers to place orders at rates current a very short time ago. The bottom has evidently been touched, and as the mills now running are all full of orders, higher prices are talked of.

**Sheet Iron.**—An excellent demand for Mill shipments has characterized this branch of trade during the past week. Manufacturers' agents are now asking 3.10¢, at mill, for No. 27 Common, and as most of the capacity of the mills has been contracted for, the advanced price is being firmly maintained. Jobbers have also advanced their rates to 3.50¢ for No. 27, in small lots. No change is reported in Galvanized Iron, the demand continuing good on the basis of o'd quotations.

**Merchant Steel.**—The Soft Steel trade is in much better shape than the Hard Steel branch, so far as the volume of business is concerned, the demand for Soft Steel being very active. The Hard Steel trade is quite light, as is usual at this time of the year. Manufacturers of soft steel have advanced their prices slightly, but there is no change in other respects.

**Steel Rails.**—The local mills have refused some good sized orders during the past week, owing to their inability to fill them during the months named. It is possible that these orders have gone East, and they assist in establishing a firmer feeling in that section. For such deliveries as will suit manufacturers here, prices are firm at \$42 for first quality standard sections.

**Scrap.**—Business is very dull, and no improvement is expected until the Western mills again get into active operation after their usual July stoppage. Quotations for carefully selected Scrap are as follows: 1 ton of 2000 lb: Railroad Shop or No. 1 Forge, \$19 @ \$20; Railroad Track, \$17 @ \$18; Mill or No. 1 Wrought, \$15.50; Light or No. 2 Wrought, \$11; Boiler Plates, \$14.50; Pipes and Flues, \$13; Stove Plate, \$10.50; Machinery Cast, \$15; Cast Borings, \$9; Machine Turnings, \$12; Axle Turnings, \$13.50; Coil Steel, \$15; Leaf Steel, \$16.50; Locomotive Tires, \$17.50; Horseshoes, \$20; Axles, \$24.50; Mixed Country Wrought, \$13 @ \$14.

**Old Rails and Wheels.**—The supply of Old Rails seems to be quite limited and holders are asking \$24 for such as they have in stock. Consumers offer \$23.50, but no transactions are reported. A few Car Wheels are held at \$21.50, but there is no demand for them at present, and it is likely that not more than \$20 @ \$20.50 could be secured for them if sales were pushed.

**Nails.**—Trade is as good as may be expected at this time of the year. Manufacturers' agents are not selling large quantities, but stocks are moving freely from jobbers' hands. Prices are about the same as before, small lots of Steel Nails being held at \$2.25, with the usual allowance for carloads. Iron Nails are 10¢ lower than Steel. The mills are reported to be holding quite firmly to their advanced rates, and there are now no rumors of low sales. The demand for Wire Nails is still very good, but some of the largest companies are now out of the market and will be for five or six weeks. Jobbers regular quotations are \$3.25 for small lots, with a slight allowance for carloads.

**Barb Wire.**—Indications now favor a good summer trade, although the demand is naturally a little less than it was a few weeks ago, and prices are a little weaker. With the possibility, however, of a reasonable demand it is expected that the market can be kept in a better condition than during previous summers. Jobbers have made no change in quotations, still selling Painted at 3.50¢, and Galvanized at 4.25¢, in small lots.

**General Hardware.**—Business has fallen off slightly as compared with previous weeks. Comparatively dull times are now expected among jobbers, to continue until the 1st to the 15th of next month. The season up to this time, however, has been so unusually good that no complaint is made about the falling off in trade, but the chance to get a little relief from pressing activity is hailed with general satisfaction.



# Trade Report.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Avenue,  
Pittsburgh, Pa., July 12, 1887.

There has been nothing of an important character developed in industrial circles during the week. While general business does not come up to the expectations of the more sanguine, it is better than usual at this time of year, and the outlook is encouraging for a general improvement all along the line before the close of the month. Our manufacturers, notwithstanding labor complications, are in good spirits, and the feeling generally obtains that the last half of the year will make a better showing than the first. Notwithstanding the wage-scale of the iron-workers has been fixed for another year, quite a number of the mills are standing idle; some are undergoing repairs, while the owners of others say they will be in no hurry about starting up until the market for Finished Iron improves.

**Pig Iron.**—While demand is still of a hand-to-mouth character, there is a very good volume of business in the aggregate; consumers, as a rule, are buying only as their immediate actual wants necessitate. One of the chief reasons for mill owners adhering closely to this policy is that in the event of the Coke strike terminating they look for a largely increased production and lower prices. A good many furnacemen, however, aver that they will not start up until they get cheaper Coke, and the prospect for this is not as promising as it was a few weeks ago. However, another week may make a radical change in the situation, and it is not best, therefore, to speculate much in regard to the future. At present the supply is light, as is also production, and desirable qualities and makes are becoming scarce; if the Coke strike holds out much longer, thereby preventing furnaces from starting up, the market will no doubt stiffen. We quote prices as follows:

Neutral Gray Forge	.....	\$18.00 @ \$19.00, 4 mos.
All Ore, Mill	.....	20.00 @ 20.50, 4 "
No. 1 Foundry	.....	21.00 @ 21.50, 4 "
No. 2 Foundry	.....	20.00 @ 20.50, 4 "
No. 3 Foundry	.....	19.00 @ 19.50, 4 "
No. 1 Charcoal Foundry	.....	25.00 @ 25.50, 4 "
Cold Blast	.....	27.00 @ 30.00, 4 "
Bessemer Iron	.....	21.50 @ 22.00, 4 "

**Muck Bar.**—While the demand does not appear to have improved, the market is considerably stronger, and we now quote at \$31 @ \$32, cash, as to quality, delivery, &c. We are advised of sales of good strong Neutral at \$32, cash, and a good many consumers are willing to pay the difference, particularly those who are tenacious about keeping up the reputation of their product. It is claimed by some mill owners that the new wage scale adds about \$1 per ton to the cost of production.

**Manufactured Iron.**—The situation has changed but little since our last report; trade is rather quiet for the present, but the outlook is favorable for an improvement soon. One of our most observing mill owners made the remark yesterday that there would soon be business enough for all the mills. At the present time some mills are undergoing repairs, while others are so busy that their owners do not like to stop for repairs. Those mills working the strongest have orders for specialties. Prices may be quoted upon a basis of 1.00¢ @ 2¢ for Bars, 60 days, 2¢ off for cash.

**Nails.**—The Nail trade continues very unsatisfactory, but the indications point to an increased business before the close of this month; it is known that stocks are very much reduced on the hands of jobbers generally, and it is probable that they will be more wanted this fall than during the spring season. It is also worthy of mention that the market is firmer. Makers who were selling at cutthroat prices have discovered that the more business they do in this way the less money they make, and they are now disposed to hold for better prices. We continue to quote at \$2.60, 60 days, 2¢ off for cash. The regular monthly meeting of the Western Nail Association takes place in this city tomorrow, but it is not expected that there will be anything done beyond regular routine business.

**Wrought-Iron Pipe.**—In some respects there has been an improvement, while in others the situation remains unchanged. Production has been reduced considerably in a regular, natural way, making it all the better, and prices are firmer, although the market is still "go as you please," each firm being free to make its own prices. There is a very fair demand, and it is thought that there will be a good deal more small Pipe used during the last half of the year. Pipe-making capacity has been largely increased within the past year or two, and to this more than anything else may be attributed the unsatisfactory condition of the market of late, as the demand was not sufficient to absorb the output.

**Old Rails.**—There has been some business reported, including sales of Foreign Tees at \$25.75 and Double Heads at \$26.50, deliverable at Youngstown, Ohio; also sales of American Tees at \$26. According to present prices at seaboard Foreign Tees could not be laid down here in Pittsburgh under \$26, and Double Heads would cost \$27. It is thought by some that the market is being boomed up more rapidly than the facts in the case warrant, and consumers are disposed to go slow in consequence. It is

argued, however, that the supply of American Rails is about exhausted, and that until within a few weeks Foreign could not be laid down at seaports excepting at a loss to the importer.

**Steel Rails.**—Heavy sections are still quotable at \$39 @ \$40, cash, at mill in Pittsburgh.

**Billets, &c.**—There has been but little change in the position of the market during the past week. Bessemer Billets are still quotable at \$31, cash, and Nail Slabs at \$30.50 @ \$31, with but little inquiry for the latter. Sales of Crop Ends at \$22 @ \$22.50, and Bloom Ends quoted at \$21 @ \$21.50.

**Railway Track Supplies.**—Railway Spikes remain unchanged at 2.60¢, 30 days, delivered; Splice Bars at 2.10¢ @ 2.20¢, and Track Bolts at 3.30¢ with Square, and 3.40¢ with Hexagon Nuts. The outlook warrants the prediction that there will be a good fall trade.

**Old Material.**—There is a fair business with indications that it will be still better later on. Stocks here, both in the hands of dealers and consumers, are light, and prices, if anything, are firmer, but unchanged; No. 1 Wrought Scrap, \$20 @ \$21, net ton; Wrought Trimmings, \$15 @ \$16; Car Axles, \$26; Cast Borings, \$12.50 @ \$13, gross. We can report a couple of sales of Car Wheels at \$20.50 per gross.

## Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts.,  
CHATTANOOGA, TENN., July 11, 1887.

The past week has been characterized by a continuation of most favorable weather for the crops, and the prospects as they now stand were never better for largest yield the South has ever seen. Under proper management there is hardly a planter in the South but what will come out far ahead of his expenses.

**Pig Iron.**—The market continues to exhibit increased strength over the last week, and a gradual stiffening up of prices and scarcity of available iron give the best evidence in the world that for a time, at least, prices are going to be higher. The quantity that could now be sold at present prices of the desirable grade of both Mill and Foundry is not in the possibility of the Southern furnaces. A buyer who was not a consumer recently solicited a price on 100 tons of Foundry, which was accepted, with the privilege of making it 3000 tons if the 100 were satisfactory. On the arrival of the 100 tons the 3000 tons were immediately taken, to be delivered within the next four months. The basis of this sale was \$17.75 for No. 1, net cash, at the furnace, and free from all commissions. The general opinion of the furnacemen is that prices will remain at least firm for the balance of the year. There appears to be sufficient demand to absorb the capacities of all the Southern plants, and there are none of the new stocks that will be available for the next eight to 12 months. Demand is getting larger from the Southern foundries, quite a number of whom are now contracting for their supplies to run through several months ahead. The termination of the three months' grace given the Southern railroads by the Interstate Commission has thrown some of them into confusion, which the subsequent order allowing the roads to be their own judges of existing conditions does not fully dissipate, and some delays are being experienced in getting rates to some of the Northern markets, which will, however, probably soon be removed.

**Miscellaneous.**—Quite a number of manufacturing enterprises by Northern capitalists have been located in this immediate neighborhood within the past few weeks, and still others in the enterprising towns of Anniston, Decatur and Sheffield.

## Cincinnati.

CINCINNATI, July 11, 1887.

There has been a further increase in the volume of business in Pig Iron during the week under review, and the general verdict of local dealers is that a firm tone prevails, with the probabilities of higher prices, and yet there are reports which discourage such a belief. The bulk of sales are at "old" prices, but in some cases there has been an advance. Reasoning from the conditions reported, an improvement in the natural and ordinary course of affairs, must follow. Stocks at Southern Furnaces are said to be especially low. The largest company in the South about six weeks ago had 8000 tons surplus; now they have 2000 tons only, with five furnaces out of blast, for relining, repairs, &c., while the demand continues active. Nail advices are to the effect that there are 40 furnaces out of blast in the Mahoning and Shenango Valleys, a curtailment of production of 30,000 tons per month. It is claimed that the Coke strike will be settled within the next 10 days, pro or con. An inspection of Virginia furnaces shows them to have very little iron available, but some small sales of Longdale Iron are reported at very low prices. One sale of Silvery Gray Mill, of 500 tons, to the Riverside Rolling Mill, on four months' time, at cash figures, has caused a flutter and much comment in local circles, but this is regarded as an exceptional transaction, if true. Besides the sale of car up to several hundred tons lots, there have been transactions of moment, as 3000 tons Southern No. 2 Mill at \$17, cash, delivery running through several months,

but there has also been a sale of several thousand tons of the same grade of iron at \$17.70, delivery running into December; 2500 tons Bessemer Iron sold at \$20 per ton at furnace, equal to \$21.60 here; 1500 tons Mottled Iron at about quotations, and several thousand tons Silvery Iron at prices ranging from \$18 to \$20. No. 2 Southern Charcoal Iron has sold at \$20 in a few 100-ton lots. From these few sales it is evident that the market is unsettled and there are evidently some conflicting elements at work. The current cash price for Pig Iron, f.o.b. cars at Cincinnati, are as follows:

Charcoal Foundry.		
Hanging Rock, No. 1	.....	\$23.00 @ \$24.00
Southern No. 1	.....	21.00 @ 22.00
Southern No. 2	.....	20.00 @ 21.00
Ohio Soft Stonecoal, No. 1	.....	20.00 @ 20.50
Ohio Soft Stonecoal, No. 2	.....	19.00 @ 19.50
Southern Coke, No. 1	.....	20.00 @ 20.50
Southern Coke, No. 2	.....	19.50 @ 20.00
Ohio and West Pennsylvania Coke, No. 1	.....	21.00 @ 22.00
Ohio and West Pennsylvania Coke, No. 2	.....	20.00 @ 21.00

Forge.		
Strong Neutral Coke	.....	18.00 @ 18.50
Mottled	.....	17.00 @ 17.25
Southern Coke	.....	18.00 @ 19.00

Car-Wheel and Malleable Irons.		
Southern Car-Wheel	.....	25.00 @ 27.00
Hanging Rock, Warm Blast	.....	24.00 @ 25.00
Lake Superior Malleable	.....	24.00 @ 25.00

**Old Rails and Wheels.**—There is an active demand for Old Wheels, and \$21 is bid for 5000 tons at St. Louis, and will bring \$21 here. Old Rails are firmer and quotable at \$23.50 @ \$24 per ton. Scrap Iron is scarce, and an anomaly of a carload of imported German Scrap is reported at Huntington, having been received at New York News, and transported over the Huntington system.

**Nails.**—Have continued firm, with a fair demand. Iron, 101 @ 60d., selling at \$2.10 per keg, and Steel at \$2.20 per keg, and other sizes at proportionate rates.

**Manufactured Iron.**—The market has continued firm in tone, with a fair current demand and considerable activity in filling old contracts. We quote: Bar Iron, 2¢; Charcoal Bar Iron, 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2 3/4¢ @ 3 3/4¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3 3/4¢ @ 4 1/4¢ per lb.

## Birmingham.

BIRMINGHAM, ALA., July 11, 1887.

Although the closeness in the money market continues, business affairs generally wear a brighter look than they have for several months. Another boom at an early day is even predicted by many who ought to be fairly well posted, but whether this is really coming for speculators or not, the outlook for regular business of every kind is most reassuring. The healthy state of the crops is just now the most notable fact, the heaviest yield of many years being promised in both the staples of this region—corn and cotton—while the upward movement in the Iron market is nearly as encouraging to manufacturers.

**Pig Iron.**—Evidences of the solidity of the improvement in the Pig Iron market are to be found on every hand. Perhaps the best reassurance that has come to local manufacturers is the increased demand of the last two weeks or so at the advanced prices. Quite a number of offers at very satisfactory figures have been declined, and the manufacturers' action has in a measure, no doubt, been dictated by the improved tone of the market. Foundry Irons have been sold to the local trade, and to other points in medium quantities at market prices, while in Mill Irons there is a notable increase of inquiry, and selling is a little freer, the demand coming mainly from the West; \$18 and \$15.50 for No. 1 Foundry and Gray Forge, respectively, at the furnace, are average prices for these late transactions.

**Finished Iron.**—Is no longer to be had here except in a few shops adapted mainly to the local trade. The Birmingham mills having been closed down some two weeks for repairs, their stock is pretty well cleaned out. They will resume in about a week, with the additional puddling plant in operation. This, with the increased work which will follow for some of the finishing department, will call for about 300 more men. Prices seem to be stationary, and the demand, as well as can be seen here, has no new features.

**Nails.**—In this line the only notable thing is the narrow margin between prices for Steel and Iron Nails, \$2.25 and \$2.20 (laid down) being the figures. A project is on foot to plant an Iron Nail mill here, sufficiently capitalized and equipped to try conclusions with the Steel men satisfactorily.

**Miscellaneous.**—Two of the largest foundries are closed down by a hopeless strike for an advance from \$1.10 to \$1.25, which, if the declarations of the operators and the Knights of Labor authorities are to be believed, will be pretty stubborn. The chief result, so far, is the stoppage of work on a large quantity of builders' material for furnaces, bridges, houses, &c., one of the concerns having several months' work booked ahead, mainly in the house building line. The new railroads have placed some more good-sized orders in the city lately for bridge and trestle and track supplies, and altogether the foundries and shops in operation have about as much work as they can do expeditiously.

## Cleveland.

CLEVELAND, July 11, 1887.

**Iron Ore.**—There are indications of lower rates for transportation, and consequently easier prices for Ore. Grain freights at Duluth have declined rapidly, and the vessel owners no longer have any excuse for high rates for Ore. It is said that the mine owners have declined offerings of vessels at former rates, and that the carrying price from Ashland is likely to fall back to \$2, with a corresponding reduction from both Escanaba and Marquette. If this reduction in freights can be brought about the price of Ore will be considerably cut down. No charters have been reported for three weeks at less than \$1.60 from Escanaba, \$2 from Marquette and \$2.50 from Ashland, a schedule of rate so exorbitantly high that the Ore market has been almost paralyzed during that time. Sales have been limited during the past week, few lots exceeding 500 tons having been disposed of. There has been a visible increase in the receipts of Ore at all Lake Erie ports over last week, and it is estimated that nearly 75,000 tons were unloaded at Cleveland. About 50,000 tons have gone forward to the furnaces. Prices have not changed, Gogebic Bessemer still selling for \$5.50 @ \$6, and Bessemer Hematites at \$5.75 @ \$6.

**Pig Iron.**—The market has shown many additional signs of improvement. The demand for nearly all brands of Iron is excellent, and the result has been a general strengthening of prices. The sales for the last week will exceed those of the previous six days fully 100%. Sellers attribute this increased activity to the fact that the scale has been signed and the possibilities of a puddlers' strike avoided. Stocks are getting very low. Following are f.o.b. cash quotations in this market:

Nos. 1 to 6 Lake Superior charcoal	.....	\$24.00 @ 24.50
No. 1 Strong Foundry, Bessemer quality, per ton	.....	21.35 @ 21.85
No. 1 strong Foundry, per ton	.....	20.85 @ 21.35
No. 2 strong Foundry, per ton	.....	19.85 @ 20.35
No. 1 American Scotch, per ton	.....	21.35 @ 21.85
No. 2 American Scotch, per ton	.....	20.85 @ 21.35
No. 1 Soft Silvery, per ton	.....	20.00 @ 21.00
Mahoning and Shenango Valley neutral Mill Iron, per ton	.....	18.85
Mahoning and Shenango Valley Red Short Mills, per ton	.....	19.85

**Old Rails.**—Quotations are nominally at \$23.50 @ \$24, but the market is almost devoid of life. Old Wheels have sold during the week at \$21.25.

## Louisville.

LOUISVILLE, KY., July 11, 1887.

**Pig Iron.**—The market continues to exhibit more favorable features, and although no advance can be reported, at the same time sales of some grades have been made at higher figures. The demand from the interior continues better than from the city, and although some lots of Southern No. 2 Mill could still possibly be bought at \$17, spot cash, at the same time it is generally conceded that no purchase for shipment from the furnace can be made at under \$17.50. Some sales from the city proper have been booked at \$17.50, which is our outside quotation to-day for this grade. Some special brands of Gray Forge and No. 1 Mill have been sold at \$18, although other brands, not so favorably considered, could probably still be bought as low as \$17.25. The same difference in prices is noticeable in Foundry grades, some brands of Coke No. 1 Foundry having been sold as high as \$21, whereas other brands can be bought as low as \$19.50, but as a general thing, the best brands are more saleable at the highest prices than the poorer brands are at our inside quotations. Many furnaces are still far behind in their deliveries, and some would not now book orders for Gray Mill at \$18. The advance in Bar Iron and Nails is having its effect on the market for Pig Iron, and is one of the factors that is stiffening the market. It is noted that the stock of Pig Iron west of the Allegheny Mountains was 13,000 tons less on the 1st of June than on the 1st of May this year, in which these two dates have shown a decrease, the reverse having been the rule for many years, and for the corresponding dates in 1886 the increase having been 31,000 tons. This is largely due to the Connellsville strike, but not wholly. The Southern furnaces have also been short of Coke, and the production in that section has been largely curtailed, some good judges estimating the output at not more than 60% of the capacity for the last four months, with no immediate prospect of any better supply. We quote for cash in round lots as below, quotations as far as possible being made from actual transactions:

Southern Coke, No. 1 Foundry	.....	\$19.50 @ \$21.00
" " No. 2 "	.....	18.50 @ 19.25
" " No. 3 "	.....	18.00 @ 18.75
Hanging Rock Coke, No. 1 Foundry	.....	19.00 @ 20.00
" " No. 2 "	.....	17.00 @ 18.00
Southern Charcoal, No. 1 Foundry	.....	21.00 @ 22.00
Silver Gray, different grades	.....	17.00 @ 18.00
Southern Coke, No. 1 Mill, Neutral	.....	17.50 @ 18.25
" " No. 2 "	.....	17.00 @ 17.75
" " No. 1 " Cold Short "	.....	17.00 @ 17.50
" " Charcoal, No. 1 Mill "	.....	18.00 @ 19.50
White and Mottled, different grades	.....	16.00 @ 17.00
Southern Car-Wheel, standard brands	.....	25.00 @ 26.00
Southern Car-Wheel, other brands	.....	22.00 @ 24.00
Hanging Rock, Cold Blast	.....	25.00 @ 26.00
Hanging Rock, Warm Blast	.....	22.00 @ 24.00

W. B. BELKNAP & Co., Louisville, report as follows, under date of July 11, 1887: The settlement of the labor question for the coming season seems to have had a healthy effect on trade, and orders are now being placed with more confidence than prior to the discussion.

**Bar Iron.**—Is moving freely, with a little stiffness in price, manufacturers urging the additional wages as a good excuse for better figures.

**Nails.**—Are not being sold in such large quantities as when they were at bottom figures, though there is still a fair demand for actual consumption.

**Barb Wire.**—Is beginning to move, as the crops are laid by and farmers now have time to turn their attention to fencing. The extremely low prices make it now a difficult matter for any other fence to compete, and the stories of fine animals ruined on the treacherous barbs seem to have no terrors for the farmer when he finds how much cheaper Barb Wire is than any other.

Of course there is the usual summer lull, which comes generally of indifference on the part of people to bestir themselves during the hot season, but the drought seems pretty well broken throughout this section and south of us, and there is every prospect of a good fall trade.

## St. Louis.

St. LOUIS, July 11, 1887.

**Pig Iron.**—Brokers and agents report considerable inquiry, and prices, especially on off grades of Southern Irons, have stiffened materially. The impression seems to be that after the Connellsville Coke strike is definitely settled the foundrymen will realize that Foundry grades are exceedingly scarce. Foundry grades are now being offered out of proportion to mill grades. There has been considerable buying within the past week, and prices show a slight advance. We quote: No. 2 Foundry Southern Coke Iron, \$20.00 @ \$20.50; No. 1 Mill, \$18.00 @ \$18.50; No. 2 Mill, \$17.50 @ \$18.00; Bessemer, \$22.50.

**Old Iron Rails.**—They are somewhat scarce, and holders are asking an advance over last week's prices; no sales of any consequence have been reported, but \$22.75 is considered the market.

**Old Wheels.**—Are still scarce and somewhat higher; \$21.00 would about represent the market.

**Scrap.**—There is not much market for Wrought, but Cast is selling freely at about 70¢ per 100.

**Barb Wire.**—Prices have declined a trifle; dealers quote \$3.25 for painted and \$4.00 for galvanized, and these prices are shaded by heavy buyers. Demand is good at the reduction.

**Nails.**—Steel are quoted freely at \$2.17 1/2, St. Louis, and are moving very slowly at this figure.

**Anthracite Coal.**—The market here is glutted and decline is looked for; present prices on cars East St. Louis \$5.75 for Furnace and \$6 for Stove sizes.

## Detroit.

CHARLES HINDBOLD & Co., dealers in Pig Iron, Detroit, Mich., report, under date July 11, 1887, as follows: While the general market cannot be said to have been in a very active condition, the placing by several of the largest buyers of their orders for future delivery, covering their entire consumption for this year, has made a very decided hole in the stocks of all grades of Iron, but particularly that of Lake Superior Charcoal. We should think that at least 10,000 tons of Lake Superior Charcoal had been placed within the past week, and this at firm market rates, and all for delivery during navigation season. There are still quite a number of the very largest buyers to make their purchases, and it does not seem possible that the market can fail to advance in the very near future. These buyers realized that the market was as low as it probably would be, which accounts for the very large purchasing that we have recorded. Southern furnaces claim to be sold up, and in some cases far ahead, on Foundry grades, and only off lots of Iron and low grades of Mill are being offered. The general report from the Northern makers depending upon the Connellsville region for their supply of coke, is: "No Iron whatever on hand, and no telling when they will make any." Bessemer Iron is scarce and advancing in price. Old material remains in a normal condition, with perhaps a little strengthening in Old Wheels. We quote the market to-day as follows:

Lake Superior Charcoal, all numbers	.....	\$23.00 @ \$24.00
Lake Superior Coke, All Ore	.....	21.00 @ 21.50
Lake Superior Coke, Cinder Mixed	.....	21.00 @ 21.50
Standard Ohio Blackbands	.....	23.00 @ 24.00
Southern No. 2	.....	21.00 @ 22.00
Southern Silvery	.....	20.00 @ 21.00
Jackson County, Ohio Silvery	.....	21.00 @ 22.00
American Old Iron Rails	.....	23.00 @ 25.00
Old Wheels	.....	20.00 @ 21.00

## Old Metals, Rags, &c.

The purchasing prices offered by dealers are as follows:

Heavy Copper	.....	\$0.05 @ \$0.07
Light Copper	.....	0.04 @ 0.06
Copper Bottoms	.....	0.03 @ 0.05
Brass, Heavy	.....	0.06 @ 0.08
Brass, Light	.....	0.04 @ 0.06
Composition	.....	0.03 @ 0.05
Lead, Heavy	.....	\$0.03 @ 0.04
Tea Lead	.....	0.02 @ 0.03
Zinc	.....	0.01 @ 0.02
Wrought Iron	.....	22.00 @ 23.00
Light Iron	.....	21.00 @ 22.00
Stove Plate Iron	.....	12.00 @ 13.00
Machinery Iron	.....	15.00 @ 16.00
Grate Bars	.....	0.05 @ 0.07
Old Rubber	.....	0.04 @ 0.05
White No. 1	.....	0.03 @ 0.04
White No. 2	.....	0.02 @ 0.03
Canvas, Linen, No. 1	.....	0.04 @ 0.05
Canvas, Cotton, No. 1	.....	0.03 @ 0.04
Canvas, No. 2	.....	0.02 @ 0.03
second	.....	0.01 @ 0.02
soft Woollen	.....	0.05 @ 0.07
fixed Rags	.....	0.01 @ 0.02
runny Bagging, No. 1	.....	0.01 @ 0.02
Light Butts	.....	0.01 @ 0.02
Good Stock	.....	0.04 @ 0.05
Newspapers	.....	0.004 @ 0.01
Waste Paper	.....	0.004 @ 0.01
Kentucky Bagging	.....	0.04 @ 0.05
Kentucky Bale Rope	.....	0.03 @ 0.04
Kentucky Bagging	.....	0.04 @ 0.05



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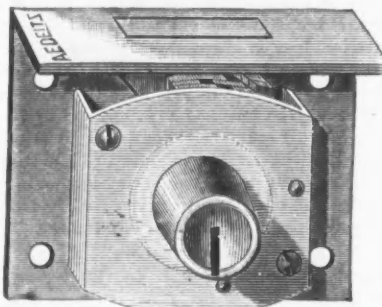
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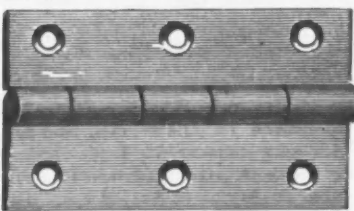
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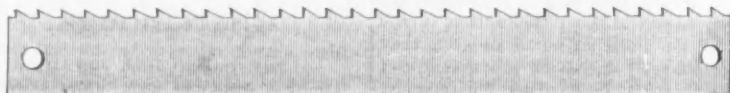
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## Foreign Markets.

## FRANCE.

PARIS, July 2, 1887.—*Metals*.—With the approach of midsummer the metal trade is relapsing into quietude. Copper and Spelter have improved somewhat; Tin has remained steady, while Lead is lower. We quote toward the close in francs: 100 kg: Copper—Chili Bars, 105 @ 108.75; Ingots and Slabs, 110; Best Selected, 113.75, and Pure Corcoro Ore, nominally 105. Tin—Banco, 277.50; Straits, 270; Billiton, 275, and English, 271.25. Lead, 30.75 @ 31.75, and Spelter, 38.25 @ 38.75. Iron.—No fresh impulse has been imparted to the iron trade in France during the week. Quiet prevails in the two northern groups of the Sambre and Escout since the last meeting maintaining prices and curtailing the output. In the Haute-Marne districts small orders continue dropping in steadily. Coke Merchant, mixed, is sustained at 14 francs 50 c. A moderate demand still prevails for Thin Sheets. Wire Nails, No. 18, are bringing 21.50. The demand for iron in Northern France is, on the whole, steady, but not active enough to favor the influence of prices. There is a bare sustained at 13.50, and Beams at 12.50. Large railroad material orders are arriving from Algeria.—*Moniteur des Interets Matériels*.

## BELGIUM.

BRUSSELS, July 2, 1887.—*Iron*.—Great firmness, coupled with a fair amount of activity, have during the week been the main features of the iron trade in Belgium. Nearly all our rolling mills are in good position; those working for the export trade especially so, having booked extensive contracts at fair rates. The demand for Beams is such that several orders stipulating speedy delivery have had to be declined. The tendency as regards prices is upward; many mills, having their summer prius, are refusing booking orders for the fall campaign except at an advance. Orders are being received so steadily and plentifully that pretty much all along the line the greatest activity is noticeable. The Lisbon harbor improvements have brought the Clabecq Works some handsome orders for Sheet Iron and Angles for Calissons. Some German makers are vexed because Cockerill has been competing with them so successfully at home lately, and their organs blame the Government Railroad Administration for procuring Steel Rails in Belgium. As the Government, while getting the Rails cheaper, collects a handsome duty on them, these complaints result in nothing. The Chinese Government has ratified the contract with a Belgian syndicate for the building of the Shanghai Arsenal at a cost of 60,000,000 francs.—*Moniteur Industriel*.

## GERMANY.

HAMBURG, July 2, 1887.—*Iron*.—Our Dortmund correspondent states that the iron trade of Rhenish-Westphalia has developed during the week no new favorable features. While the demand for Finished Iron leaves nothing to be wished for, Pig Iron is in a bad way, the demand for the latter being dragging in the extreme, and it is correspondingly weak. Both Bessemer and Foundry have been in less request. Spiegel is sustained with difficulty in the absence of an export trade therein; it is quoted 50 @ 60 marks for 10 @ 12 1/2 Mangane; Forge Pig, 41 @ 43.50; German Bessemer, 50 @ 51; Luxembourg Forge, 40 @ 41 francs at the depot. Great animation continues to be observable on the other side of the Channel, the demand chiefly running on Beams. Makers are loaded down with orders; as at the time their action is harmonious, an improvement in prices seems to depend under the arrangement of a common syndicate sales' office, June 23. Boiler Sheets are also doing tolerably well, there being an increased inquiry, and the rates obtained are remunerative. Thin sheets also sell with ease, but, as there is competition, no improvement seems in immediate prospect. The export branch, on the other hand, has nothing encouraging to report. Machine shops and foundries have no cause for complaint, yet an increase of orders at this juncture would be welcome, so as to carry them smoothly into the fall campaign. Bessemer steel billets may be quoted 110 @ 122, and wire rods 108 @ 110; *Metals*.—Our market has been quiet and unaltered, except lake copper, which is higher. In Silesia there has been some activity in shipping lead and spelter to Austria in June; orders have also dropped in from other quarters. Should they continue, an improvement may ensue. Meanwhile we quote in this market: German Lead, 12.50 @ 12.75 mark; Lake Copper, 40 @ 50; Tin, 104 @ 108; Spelter on the spot, 14.50 @ 15.50; do. to arrive, 14 @ 14.50; common Silesian Sheet Zinc, 17 @ 18; Vieille Montagne, 20.20 @ 20.70; Shading Zinc, 20; Zinc White, 21 @ 22; do. Gray, 20 @ 22; Tin Salt, 40 @ 72 1/2 kg.—*Borsenblatt*.

\* Pig iron production in Germany, Luxembourg included, during the first five months has been 1,367,721 tons, against 1,427,572 in 1886.

## HOLLAND.

ROTTERDAM, June 28, 1887.—*Tin*.—The market has relaxed into a quiet mood. Billiton, spot, being obtainable at 61, futures at 61.25, and Banca, spot, at 61.75 guilders @ 50 kg.—*Koch of Voorboom*.

## SPAIN.

BILBAO, June 18, 1887.—*Metals*.—The official returns of shipments from Spain during the first four months show the ensuing result:

	1885.	1886.	1887.
Calamine.....	15,533	10,032	8,257
Pyrites.....	27,152	22,535	26,421
Iron Ore.....	1,336,357	1,516,336	1,822,534
Copper Precipitate.....	9,402	8,125	9,823
Pig Lead.....	42,128	38,187	42,972
Quicksilver.....	459	465	565

Total.....1,682,371 1,796,670 2,150,860  
Except Calamine, every item shows an increase. Iron Ore—Has been quiet at 7, Campanil, and 6/8 @ 6/9, Rubios Superiores. Shipments have been on the decrease; they amount so far to 2,113,800 tons, against 1,575,825 in 1886. Is neglected for export, but wanted at home.—*Bilbao Martimo y Comercial*.

## AUSTRIA.

VIENNA, June 29, 1887.—*Iron*.—Although the country at large has been suffering from continuance of heavy rains in June, and Hungary from inundations, the prospect is bright owing to the abundant crops. Our market has been quiet, but steady. Great dullness is prevailing in Bohemia. The demand for Hardware is not so proper has led to an advance all round. Structural Iron, Beams in particular, enjoy a brisk demand. Our market closes firm as follows, in florins, 100 lb: Pig, 38 @ 46; Merchant, 105 @ 125; Sheets, 140 @ 175, and Sheets for Joists, 140 @ 185. Beams, 112 @ 117. *Metals*.—The market has been moderately active, but steady. We quote Copper 55 @ 56 @ 100 kg.; Lead, 17.50; Spelter, 19.20; Tin, 136 @ 137; Antimony, 36, and Quicksilver, 223.—*Handels Journal*.

## ITALY.

ROME, June 29, 1887.—*Rolling Stock*.—The owners of machine shops in Savona, Genoa, Milan, Venice and Naples have petitioned the Government to raise the duty on rolling stock to the following figures: On Locomotives, 20 per cent. or 100 francs on Tenders to 17.50, and on Freight Cars to 14, if covered, and 12 if open. The petition has been favorably received, and a Government bill to that effect is to be introduced in Parliament.

C. C. Goodrich, general agent of the Hartford and New York Transportation Company, writes to the Interstate Commerce Commission that "the most outrageous wrongdoing on cargo freights" is practiced by the New York and New England Railroad and the Connecticut Western Railroad, in an endeavor to drive out and destroy the water commerce. The roads, he says, having fixed a reasonable rate to Hartford, have put in force an enormous local tariff from river points to inland towns, thus depriving inland points from all benefit of water competition, and compelling shippers to send all rail.

The Brooklyn Elevated Railroad is crippled by a strike of the locomotive engineers, who allege that an attempt is making to displace all members of the Brotherhood.

## MANUFACTURING.

## Iron and Steel.

A dispatch from Youngstown, Ohio, dated July 10, says: "Edwin Bell, of this city, H. S. Odert and Samuel J. Atkins, who have been operating the rolling mill at Pomeroy, Ohio, under a lease with an option to purchase, yesterday signed a contract to erect a rolling mill at Bowling Green, Ohio. The citizens of Bowling Green donate the land for the plant and agree to furnish natural gas free to operate the mill. A portion of the Pomeroy mill will be taken to Bowling Green. The contract requires the parties to be making iron by January 1, 1888."

The Cleveland City Forge and Iron Company, of Cleveland, have just turned out a shaft 16 1/4 inches in diameter and 25 feet long, with six cranks, stroke 4 1/2 feet, for the largest steel steamship on the lakes, now being constructed at Buffalo. The manufacture of this shaft required three months.

The Pennsylvania Steel Company, of Steelton, Pa., have contracted with the Babcock & Wilcox Company for the first boilers that will be used for two blast furnaces at their new steel works at Sparrow Point, near Baltimore, Md. The contract calls for 16 boilers of 240 horse-power each, to be finished by September 15. When the first two blast furnaces are completed others will be built.

We take the following from the Cleveland (Ohio) *Trade Review* of the 9th inst.: "The Crucible Steel Works, which had been shut down for some time, were started up again this week, and within a short time will be in full running order for the production of what appears to be an excellent quality of steel, obtained from old steel of any kind, either in the form of rail ends, sheets or bars. The work is done in a heating furnace constructed differently from the ordinary kind only in the matter of bottom. Instead of the customary sand base, the bottom is composed of a mixture of pulverized iron ore and ground-up fire-brick which is reduced to a semi liquid state. After being allowed to cool the ore forms a homogeneous mass with the brick, and the furnace is then ready for work. When the bottom is quite hardened the furnace is charged sufficiently with tap cinder to make a slag bath to a depth of 4 or 5 inches. A charge of steel of about 2 tons is then charged into and submerged in the bath, and is heated to a degree of heat varying from 4500 to 5000°. By means of the slag bath oxidation is prevented, and a quality of reheated steel is produced, said to be possessed of a greater tensile strength and to be more malleable than Bessemer. Its tensile strength is stated to be 85,000 pounds and its ductility is claimed to be equal to that of the best Norway iron. We have seen some bars rolled from steel produced by the above-described process which seemed in every way to bear out the claims made for the process. It is proposed to utilize the product largely for wheel tires, horseshoe bars and similar purposes."

The Twindell Construction Company, of Pittsburgh, have closed a contract with the Pittsburgh Rustless Iron Works for the erection of a Bower-Barff Rustless iron plant. The contract calls for the erection of an oxidizing furnace, annealing furnaces, drags, and, in fact, everything necessary to make the plant a complete one. It is expected to be in operation about August 10. They have also closed a contract with Smith Bros. & Co., proprietors of the La Belle Steel Works, for the erection of a 15 ton open-hearth steel melting furnace. Work has already been commenced and the furnace will, in all probability, be completed about August 15 next.

The work of building the galvanizing shop, now in course of erection by the Standard Iron Company, of Bridgeport, Ohio, is rapidly approaching completion. The building will measure 80 x 45 feet, and, it is expected, will be completed by August 1, and will be in operation by September 1. The production will be mainly used by the Standard Iron Company in their corrugating department, though some merchant iron will be galvanized.

Jas. Wilson, president of the Bellaire Nail Works, of Bellaire, Ohio, writes us as follows, under date of July 5: "Our capital stock has been \$500,000. We built our steel plant, and rebuilt our blast furnace, and made other extensive improvements from the resources of the company without increasing the capital stock. At a meeting of the stockholders, on June 25, the Board of Directors were instructed to increase the capital stock to \$1,000,000 and to declare a stock dividend of 50 per cent. to represent these improvements, bringing the actual capital up to \$750,000. A 5 per cent. cash dividend had been previously declared by the Board of Directors."

Among the improvements that will be made in the mills in Pittsburgh during the summer shutting down for repairs is the addition of a battery of 12 steel boilers at the Elba Iron Works and a battery of similar size at the Keystone Mill at Soho. A new iron framework and roof over 300 feet long and two batteries of new boilers will be erected at the Vesuvius Iron Works, at Sharpsburg. A puddling forge of 20 furnaces will be built at Graff, Bennett & Co.'s works in Millvale.

During the shut down at the mills of the Beaver Falls Iron Company, at Beaver Falls, Pa., extensive repairs will be made and new machinery added. A new engine to run the shears and do other light work will be put in. A new set of shears, several new sets of rolls, and a new heating furnace will be built. The mill is overrun with orders and will start up just as soon as possible.

Furnace "A" of the plant of Carnegie Bros. & Co., at Braddock, Pa., was blown in on the 7th inst. The furnace has been idle for about two months, and has been thoroughly repaired. All the furnaces of the above company, seven in number, are now in operation with the single exception of Furnace "E" which will blow in about August 10.

In answer to an advertisement issued early last month the Navy Department has received a proposal from the Midvale Steel Company, of Philadelphia, to furnish 10 sets

of steel forgings for 6 inch breech-loading rifles, and one set of chase hoops for a 10 inch gun, aggregating about 6 tons of forgings. The prices named in the proposal are \$50,960 for the forgings of rough-bored and turned, and \$53,385 for the same pieces if the department undertakes the work of rough-boring and turning at the Washington Navy Yard. Action will be taken on the proposal within a few days.

The rod mill of the Cambria Iron Company, at Johnstown, Pa., resumed operations on the 7th, after an idleness of one month. Natural gas is used in all the furnaces.

The annual meeting of the stockholders of the Bethlehem Iron Company was held at Bethlehem on June 28. An elaborate report of the affairs of the company showed the condition of the great establishment to be highly satisfactory. Last year's board of directors was re-elected. After the stockholders' meeting the directors met and re-elected these officers: President, Alfred Hunt; vice-president, William W. Thurston; general manager, Robert H. Sayre; chief engineer and general superintendent, John Fritz; secretary, A. S. Schropp; treasurer, C. O. Brunner.

Bertha Furnace (Charcoal), formerly called Paulding, at Cecil, Paulding County, Ohio, was put in blast July 5, under lease by S. F. Eagle. The furnace has been idle for more than three years.

In a letter which we have received from Capt. H. S. Chamberlain, president of the Roane Iron Company, of Chattanooga, Tenn., he gives the following history of the development of the manufacture of steel in the South by his company. "The Roane Iron Company built two 8 ton open-hearth furnaces in 1878, and in December, 1878, we made our first steel rails. No Bessemer ores had at that time been developed in the South, and pig iron and crop ends were brought principally from England, although small quantities of pig iron and rail ends were purchased from time to time in the East. These furnaces continued making steel for rails until January, 1883, when, on account of the depression in the steel rail trade, they were closed down, and have not since been operated. The development of the Cranberry ores in North Carolina giving us a cheap Bessemer ore of the highest quality (phosphorus being only from 0.009 to 0.013 per cent.) led our company to begin the construction of a Bessemer plant in the fall of 1886. The plant, as finished, consists of one 5-ton converter, but everything has been built with a view to erecting a second vessel should it be deemed advisable. On May 7, at 5:37 p. m., the vessel was turned up with a charge of 7800 pounds of metal, and at 5:57 the first steel was poured. Three ingots were made, which were rolled into ten 56-pound rails of full length and superior quality. The iron used was made at our furnaces, at Rockwood, Tenn., from Cranberry ore."—*Bulletin*.

The Vulcan Iron Company, Richmond, Va., have been incorporated, to enlarge the Vulcan Iron Works and add a rolling mill, with T. Seddon Bruce as president, and Philip A. Bruce, secretary and treasurer. The capital stock is to be not less than \$100,000.

At a meeting of the stockholders of the Negaunee Iron Company, of Negaunee, Mich., held on the 2d inst., the following officers were elected for the ensuing year: Mrs. Edward Breitung, president; J. B. Maas, secretary; Mrs. Breitung, T. E. Pearce and J. B. Maas, directors. The officers of the company were authorized to reduce, in their discretion, royalties to not less than 40 cents per ton on ore sold under \$3, and 50 cents per ton on ore sold at or over \$3.

The annual meeting of the proprietors of the Nashua Iron and Steel Company was held at Nashua, N. H., on the 2d inst. The reports of the treasurer show that there has been a great increase in business over the report of one year ago, and a proportional increase of both product and business during the past six months. The following board of directors were elected for the ensuing year: John A. Burnham, William A. Burnham, of Boston; Aretas Blood, of Manchester; Gen. George Stark, Hon. V. C. Gilman, of Nashua. Subsequently the board organized by the election of Aretas Blood as treasurer and Edison F. Chandler as clerk.

A dispatch from Reading, Pa., dated July 7, says: "There threatens to be a general stagnation of the iron industries of this section of the Schuylkill Valley, owing to the strike of the employees of the Reading Iron Works. Following upon the closing of all the departments of that large establishment comes the announcement that the Keystone Iron Works, at Gibraltar and Naomi, have closed. These concerns together employed 500 men, and were dependent on the Reading Iron Works. Over 300 employees of the Birdsboro' Rolling Mill and Rail Works are also idle on account of the refusal to accept a reduction of wages. The Blandon Iron Works, now in the hands of a receiver, will be sold on the 23d inst., and the future outlook of the iron trade in this vicinity is anything but bright. The Reading Iron Works will probably remain closed for six months. The managers say that the shutting down is for an indefinite period. The employees' wages were paid semi-monthly, and the payroll averaged \$100,000 per month. The withdrawal of this amount from circulation will have a serious effect upon the business prosperity of Reading. The employees have just called a meeting to arrange for weekly payments to each out of the beneficial fund which they started several years ago. They claim to have a large amount in the treasury and say they can stand a long siege. One of the leaders stated that when they asked for an increase of wages early in the spring they were told that if they would wait until the 1st of April they would be given a handsome advance, with the assurance of a year's work; but when the 1st of April came an advance of only 5 per cent. was made, and a month thereafter they were asked to submit to a 10 per cent. reduction."

The Mount Hope Iron Works, at Somerset, Mass., shut down for repairs last week. During the shut-down, extensive and thorough repairs will be made all over the works. The old engines are being taken out, and those recently purchased by the company from the Fall River Iron Works will take their place.

The management of the Reading Iron Works, at Reading, Pa., state that their mills are now closed for an indefinite period, as they will not run them at a loss. Should prices warrant, work will be resumed at the old wages. If not, and the men refuse to accept a reduction, the works will remain idle.

The Fanny Furnace, at Shawnee, Ohio, owned by E. L. Harper and John C. Hamilton, the Licking Iron Company, has been seized by the sheriff of Perry County on an execution for about \$50,000 in favor of the First National Bank of Newark and John C. Hamilton, president. The furnace is shut down and banked. Sixty thousand dollars' worth of pig iron and raw material are also seized.

The Curtis Regulator Company, of Boston, Mass., report an increase of sales of all their goods of 50 per cent. in June, 1887, over the sales of June, 1886; also a very handsome increase in sales of special goods. Their new

thorough repairs will be made all over the works. The old engines are being taken out, and those recently purchased by the company from the Fall River Iron Works will take their place.

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## Machinery.

The employees of the Westinghouse Electric Company, of Pittsburgh, will be paid every two weeks instead of monthly.

The Wainwright Mfg. Company, of Boston, Mass., have appointed Victoriano de la Calle of Matanzas, as their agent in Cuba for the sale of their corrugated tubing, feed-water heaters, expansion joints, purifying plants for steam boilers, radiators, &c.

The Roanoke Machine Works, Roanoke, Va., have during the year of 1887 added to their machinery in not only the smith shop but machine shop, planing mill and foundry, new tools to the extent of \$14,000, which increases the capacity of their output to fully 50 per cent. above what it was previously.

Nicholson & Waterman, manufacturers of machinery and tools, Providence, R. I., have just finished the thorough reorganizing of their plant. They intend continuing the manufacture of lathes and heavy tools, and have recently completed arrangements for adding an extensive line of special machinery. Mr. Stephen Nicholson, the head of the firm, was for 10 years superintendent of the Nicholson File Company.

The Laidlaw & Dunn Company, of Cincinnati, Ohio, have purchased the property formerly owned and occupied by the T. J. Nottingham Company, corner Pearl and Plum streets, having a frontage on Plum street of 85 feet and on Pearl street 80 feet. It is five stories high, giving them something like 32,000 square feet of surface. The new premises have been remodeled and fitted up with all appliances and machinery necessary to manufacture steam and hydraulic press pumps and tobacco machinery of every kind.

The Southern Tool Company, of St. Louis, have not accepted the offers of citizens of Centralia, Ill., but are now thinking of establishing their works at Evansville, Ind. In all likelihood the latter place will be selected as the point of manufacture.

The Brightman Stoker Company, of Cleveland, Ohio, have recently entered orders for their mechanical stoker for steam boilers from the following establishments: The Lyman Strong Company, the Root & McBride Building, the Townsend Block, and Fitzsimmons & Co., all of Cleveland; the Indurated Fibre Company, of Lockport, N. Y.; the Michigan Central Railroad Company, Detroit, Mich.; F. Schumacher Milling Company, Akron, Ohio; John H. Mills, Boston, Mass.; Quincy Paper Company, Quincy, Ill.; Duether Mfg. Company, Buffalo, N. Y.; Hoover, Owens & Rentschler Company, Hamilton, Ohio, and the Detroit Lubricator Company, Detroit, Mich.

The machine shops of the Pittsburgh and Lake Erie Railroad, at Chartiers, Pa., were destroyed by fire last week, causing a loss of \$50,000. There was no insurance.

The Westinghouse Electric Company, of Pittsburgh, have orders ahead to keep their full force of 775 men working steadily, until November 1. Among the electric plants under construction are those for Colorado Springs, Easton, Md.; Sheffield, Ala.; Beaver Dam, Wis.; Denver, Portland, Me.; Charleston, W. Va.; Galveston and Austin, Tex., and a number of others.

The E. Ingraham Clock Company, at Bristol, Conn., have decided on building a new factory. It will be of brick, four stories in height, the ground dimensions being 300 x 60 feet. They are now putting up a factory for the manufacture of clock dials. It is 30 x 60 feet and two stories in height. The company now employ 300 hands. The new works will make double that number necessary.

The Webster Camp and Lane Machine Company, of Akron, Ohio, have found it necessary to enlarge their works. The work is already well advanced on a substantial brick erecting shop 50 feet wide by 116 feet long, with an L 40 feet wide connecting this with their present machine shop. Adjoining this is a 40 x 70 foot brick smith shop, well lighted and arranged. The erecting shop is to have a 20-ton traveling crane traversing the whole length of the building. Their large foundry is now well equipped for heavy work, and with their added room and facilities the company will be enabled to increase their present force of 140 men to 200, if occasion requires, and will be able to fill promptly all orders intrusted to them.

The Pusey & Jones Company, of Wilmington, Del., have just taken what is said to be the largest single order for paper-making machinery ever given in the world. It consists of four complete mills and other machinery for mills at Palmer's Falls, N. Y.

The Sherman Foundry and Machine Works, at Sherman, Texas, lately purchased by Z. P. Dedrick, are being enlarged. A department for building street cars is completed and several orders are being filled. The smelting capacity of the foundry will be increased to 10 tons per hour soon.

The Curtis Regulator Company, of Boston, Mass., report an increase of sales of all their goods of 50 per cent. in June, 1887, over the sales of June, 1886; also a very handsome increase in sales of special goods. Their new

pump pressure regulator is meeting with a ready sale, a single elevator form ordered in June, one 2 inch, three 2 1/2 inch and two 4 inch pump regulators, besides one 4 inch for steam heating. They sold 12 pressure regulators for steam syren fog horns, making this system a perfect success under varying boiler pressure.

The Babcock & Wilcox Company, of New York, announce the following sales of boilers effected during May and June of this year:

Gordon, Strobel & Laureau, Philadelphia, seventh order.....	292
S. D. Kenrick, Glen Falls, N. Y.....	51
Swift Mfg. Co., Columbus, Ga., third order.....	292
Gordon, Strobel & Laureau, Philadelphia, eighth order.....	1248
Luray Cave and Hotel Co., Luray, Va.....	45
Mineral Railroad and Mining Co., Lake Fidler (Colliery), Shamokin, Pa.....	240
Mineral Railroad and Mining Co. (Cameron Colliery), Shamokin, Pa.....	240
Solvay Process Co., Syracuse, N. Y., third order.....	532
Pennsylvania Steel Co., Baltimore, Md., second order.....	3840
Columbus Buggy Co., Columbus, Ohio, third order.....	250
Springville Co., Rockville, Conn.....	244
White Mfg. Co., Rockville, Conn.....	136
Pencoyd Iron Works, Pencoyd, Pa., fourth order.....	156
D. S. Cook, Princess Furnace, Glen Wiltou, Va.....	312
George Westinghouse, Jr., Pittsburgh, Pa.....	170
Bueyrus Gas Light and Fuel Co., Bucyrus, Ohio.....	85
Ch. Jacquin, New York City, for Knickerbocker Cottage.....	25
M. Camacho Rodan & Nephew, New York City, for Mexico.....	122
Total horse-power.....	8580

Lovegrove & Company, 143 and 145 North Third street, Philadelphia, inform us that they are unusually busy, the amount of business in machinery for the month of June almost doubling that of the corresponding month of last year. They have been appointed agents for the Champion blowers and forges.

## Hardware.

The J. B. Savage carriage hardware concern will wind up business at Southington, Conn., this week. Some of the machinery has already been shipped to Scranton, Pa., where the business will be conducted by the Scranton Forging Company, of which J. B. Savage is president. About 25 hands were employed, and a number of them will move to Scranton. Charles A. Pond will be general manager of the new company.

Rowe & Ramey, Indiana, Pa., patentees of the Eureka cut-off and strainer, are intending to make arrangements for its manufacture, and expect to put it on the market in a short time.

The new shop at the D. & H. Scovill Hoe Works, Hingham, is rapidly progressing. It will be 200 feet in length. Fifty feet of it will be a two-story machine shop, containing a large engine already ordered from Providence, R. I. A 100 foot chimney will be attached, being the second large chimney and the tallest in the village. The new factory will add to the manufacturing interests of the place, both in appearance and in material value. It will call for an additional force of at least 25 men.

The Stambaugh-Thompson Company, of Youngstown, Ohio, have been incorporated with a capital of \$100,000, and includes the hardware store of Stambaugh & Thompson, on West Federal street, and the plumbing establishment of Montgomery & Thompson, on Phelps street. The stockholders elected the following directors: John Stambaugh, Sr., James H. Thompson, Daniel B. Stambaugh, Rany Montgomery and Tod Ford. The directors elected the following officers: John Stambaugh, president; Tod Ford, vice-president; D. B. Stambaugh, secretary and treasurer; and James H. Thompson, general manager.

The Stover Manufacturing Company, of Freeport, Ill., have just received from the California Wire Works, of San Francisco, Cal., a large order for barb wire machines for manufacturing four-point barb wire, which will keep them busy for several weeks. Business in this department of their works is much better this year than it was last year. They have just shipped a number of two-point machines to parties at Crawfordville, Ind. Inquiries from other quarters lead them to believe that the barb wire business is picking up.

The Freeman Wire Company, of St. Louis, have purchased 5 1/2 acres of land in East St. Louis, between the Vandana and Ohio and Mississippi railway tracks, upon which they are erecting factory buildings. The main structure will be 120 by 200 feet, to accommodate machinery with a daily capacity of 75,000 to 80,000 pounds of barb wire. The works will be in operation in 60 days, and in the meantime the company will fill orders from stock for, perhaps, 30 days yet. Immediately adjoining the Freeman factory the Illinois Wire Company are erecting a large wire drawing mill, on 2 acres of ground bought from the former. The situation of the mill will be such that wire can be run direct from it into the barb wire factory of the Freeman people. Both companies have railroad tracks on two sides of them, and are connected by means of the B-H line with all the railroads in East St. Louis.—*Age of Steel*.

The Penfield Block Company, Lockport, N. Y., inform us that they are purchasing machinery and stock preparatory to quite an expansion of their business, having decided to make wooden snow shovels and a cheaper wooden block for farmers' use in elevating hay—something that will be self-lubricating and at a low price.

The Vibrating Harrow Works are to be removed from Saegertown, Crawford County, Pa., to New Castle, Pa., and the capacity greatly enlarged.

The Cleveland Twist Drill Company, Cleveland, Ohio, have recently placed in their factory a Universal Grinding Machine, of Brown & Sharpe's manufacture, and have also added new milling machinery that will materially increase their facilities for turning out their self-feeding and expansion reamers. Their catalogue, dated July, 1887, is now ready for distribution.

The Augusta Wrench Company, Augusta, Me., have made arrangements to move to Oakland, where they have secured water-



power, but owing to the demand for their goods they have been somewhat delayed in their removal, and will not be able to take out their machinery from their present factory for a month or two. They advise us that they are making a great improvement in their wrench, manufacturing it now with double jaws.

The sale of the Binghamton Hoe and Tool Company, Binghamton, N. Y., is announced. Its business, it is stated, was not successful, and it has been closing up affairs for some time. Recently a judgment for about \$7000 was entered against it, which is the immediate cause of the sale. It is thought that all claims will be paid in full.

### What Shall be Done With the Surplus?

(From our Washington Correspondent.)

The extraordinary accretion of the excess of Government revenues over expenditures is becoming a matter of more serious concern than was anticipated a few weeks ago. The surplus of the month of June aggregated as much as the total amount of the last and final bond call payable July 1, leaving the previous accumulations upon which the call was predicated a few weeks before hoarded in the Treasury. This is generally the season of large receipts from customs. Therefore the next four or five months, when the importations of all classes of merchandise for the fall and winter markets will be made, will witness a greater accumulation than would be likely to characterize a later period.

In the face of these facts, ex Secretary Manning, who is still potent in the Administration ear, if not in its councils, has very forcibly declared his sentiments that the anticipation of the interest or purchase of bonds in the market would "ruin any party before the people." The market caused evident surprise in Treasury circles. It was a mystery to them whether he was talking as president of a Wall street bank or as a manager of political maneuvers. It was remarked that a movement was on foot at the money centers to hoard money, and if the Government could be persuaded not to come to the rescue by resorting to the legal methods in its power to extend relief for a money stringency the rates of discounts and loans could be raised to a figure which would yield a handsome profit to speculators, regardless of the interests of business or the current necessities of every branch of trade.

The Secretary of the Treasury has intimated that he would not anticipate interest nor buy bonds. The reason for this determination being that, permitting the surplus to go on increasing, would be the more likely to coerce Congress to take prompt action, when it assembles, upon the vital question of revenue reduction. The Secretary has indicated his opposition to the abolition of the tobacco tax or reduction from the sources of internal taxation. He has also expressed his advocacy of reduction in the direction of the customs. There is a greater determination on the part of the Administration to take a direct hand in the tariff question next winter than there was some weeks ago, although it was regarded even then as a fact. The subject has already been canvassed. The startling revenues of last month have added to the drift in that direction. The Secretary has left the city for two weeks, and upon his return will give the matter direct attention, and will doubtless outline his views in the premises, with directions as to the compilation of the details.

The importations of iron are beginning to cause some nervousness among the so-called tariff reformers in the Government. Their attention has been called to the fact by politicians who are watching the barometer of sentiment among the working classes by pointing out that while duties are at their present figures prices cannot rise to meet the demand of labor. There is some talk of a movement in favor of an increase of the duty on pig iron from \$6.72 to some point between \$7.12 and \$8.00, which it is claimed would simply cover the difference between the rates of American and foreign labor. This would necessitate a scaling up of the figures on certain other grades of iron subject to the same effects of insufficient duty to meet those differences. As this covering the difference between domestic and foreign labor has been declared as a principle in the President's messages and Secretary's reports, the preparation of an Administration bill will be of peculiar interest to manufacturers as well as workers.

### CUSTOMS DECISIONS ON MANUFACTURES OF METAL.

Certain so-called forged iron hooks, with a tang and shoulder for a handle, and also a blade with a notch or slit in the end, the whole being of the form and character of what is commercially known as a well-awl or a ship-awl used for stripping welts from harness, are held to be dutiable (not as forgings of iron) at the rate of 45 per cent. ad valorem, for "manufactures, not specially provided, composed wholly or in part of iron."

Certain so-called saddle nails, steeple-chase nails, brace nails, and tools designated as pricking irons, pricking wheels and saddle hammers, are held to be dutiable as follows: The nails at a duty of 35 per cent. ad valorem, for "saddlery," and the tools at the rate of 45 per cent. ad valorem, for "manufactures, not specially provided for, composed wholly or in part of iron."

Certain small brass tubes of various sizes cut to the proper length for the production of musical notes, but otherwise unfinished, are not entitled to classification as "musical instruments of all kinds, inasmuch as they are not completed indispensable parts of musical instruments, but are dutiable at the rate of 45 per cent. ad valorem, under for "manufactures composed wholly or in part of metal."

So-called "buckhorn strips," articles manufactured from steel wire rods converted into wire by being flattened by rolling, and subsequently passed through another process resulting in the formation of bars upon the flattened wire, are held to be dutiable at the rate of 45 per cent. ad valorem, for "manufactures not specially provided for, composed wholly or in part of steel."

### Exports.

The following table presents the exports of Hardware, Iron, Steel, Metals, &c., from the port of New York, for the week ending July 12, 1887:

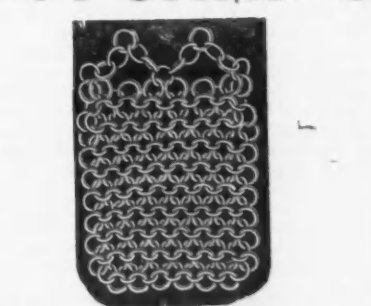
Argentine Republic		French Possessions in Africa.	
Quan.	Val.	Quan.	Val.
Ag. imp. pkgs. 1197	\$49,062	Hdw. cs. 117	2 28
Hdw. pkgs. 10	171	Gottentburg.	
Revolvers, cs. 2	1,318	Clocks, cs. 4	65
Guns, case 1	139	Hdw. cs. 85	1,130
Tinware, cs. 2	40	Glasgow.	
Mf. iron, pkgs. 5	200	Sew. ma. cs. 542	3,738
Cartridges, cs. 6	315	Hdw. cs. 6	200
Clocks, pkgs. 4	209	Chop iron, cs. 3	86
Antwerp.		Mach'y, pkgs. 1	109
Hdw. cs. 23	285	Havre.	
Ag. imp. pkgs. 4	41	Sew. ma. cs. 43	681
Mach'y, pkgs. 2	80	Ag. imp. pkgs. 47	2,358
Tinware, cs. 8	105	Hdw. cs. 38	962
Mf. iron, pkgs. 13	135	Mach'y, pkgs. 2	1,450
Sew. ma. cs. 1	180	Null.	
Augsburg.		Pumps, pkgs. 3	50
Mach'y, pkgs. 1	125	Hdw. cs. 117	1,040
Bordeaux.		Clocks, cs. 9	95
Copper, bars. 7,100		Hamburg.	
Hdw. cs. 59	737	Ag. imp. pkgs. 210	4,867
Clocks, cs. 1	20	Hdw. pkgs. 175	2,862
Bremen.		Mach'y, pkgs. 25	1,785
Mach'y, pkgs. 1	25	Clocks, cs. 87	1,340
Firearms, case 1	125	Mf. iron, pkgs. 52	622
Pumps, pkgs. 1	55	Tinware, cs. 5	77
British West Indies.		Light rods, cs. 2	50
Hdw. pkgs. 15	222	Old copp. pes 32	833
Sew. ma. cs. 13	179	Nails, cs. 7	68
Ag. imp. pkgs. 4	25	Sew. ma. cs. 205	2,908
Nails, kegs. 111	317	Revolvers, cs. 2	50
Tinware, case 1	21	Clocks, cs. 2	50
Mf. iron, pkgs. 5	188	Hayti.	
Nails, cs. 20	55	Iron, pkgs. 8	29
Clocks, case. 1	15	Nails, kegs. 6	24
British Australia.		Anchors, bds. 2	19
Cutlery case. 1	89	Tinware, cs. 2	48
Mach'y, pkgs. 13	2,444	Hdw. cs. 22	492
Pumps, pkgs. 3	1,294	Sew. ma. cs. 1	8
Mf. copper, cs. 4	68	Japan.	
Hdw. cs. 1	78	Sew. ma. cs. 19	269
Brazil.		Wire cl. cs. 1	142
Hdw. pkgs. 71	1,383	Clocks, cs. 28	34
Grantware.		Hdw. cs. 103	519
Clocks, cs. 22	1,362	Mf. iron, pkgs. 82	750
Sew. ma. cs. 59	829	London.	
Cartridges, cs. 2	10	Sew. ma. cs. 376	10,465
Tinware, case 1	2	Clocks, pkgs. 234	6,770
Air brakes. 15	5,480	Mach'y, pkgs. 842	14,729
Ag. imp. pkgs. 1	30	Pumps, pkgs. 14	606
Mf. iron, pkgs. 3	67	Aut'm'y ore, bbls. 127	2,250
Revolvers, cs. 2	150	Ag. imp. pkgs. 151	5,987
Cutlery, case. 1	32	Hdw. pkgs. 284	4,014
British Honduras.		Mf. iron, pkgs. 2	37
Cutlery, case. 1	11	Wire, pkgs. 2	144
British East Indies.		Alum'n's iron, bbls. 2	560
Mach'y, pkgs. 94	3,600	Skates, cs. 25	435
Pumps, pkgs. 4	60	Lisbon.	
Mf. iron, pkgs. 18	87	Sew. ma. cs. 50	574
Belfast.		Ag. imp. pkgs. 2	250
Rifles, case. 1	73	Guns, cs. 4	428
British Guiana.		Liberia.	
Hdw. cs. 14	175	Clocks, pkgs. 3	40
Clocks, cs. 8	79	Sew. ma. cs. 19	19
Pumps, pkgs. 1	19	Nails, kegs. 6	16
Bradford.		Hdw. cs. 2	10
Mf. iron, pkgs. 10	50	Mf. iron, pkgs. 1	18
British Possessions in Africa.		Leith.	
Nails, kegs. 12	26	Wash. mach. cs. 8	72
Ag. imp. pkgs. 431	7079	Ag. imp. pkgs. 1	13
Mf. iron pkgs. 48	262	Hdw. cs. 1	28
Clocks, cs. 6	91	Liverpool.	
Pumps, pkgs. 4	130	Copper maste, bbls. 71	5,000
Nails, cs. 31	142	Ag. imp. pkgs. 37	1,064
Ag. imp. pkgs. 9	86	Hdw. pkgs. 32	1,315
Hdw. pkgs. 264	4428	Firearms, cs. 2	7
Cutlery, case. 15	254	Mach'y, pkgs. 62	4,331
Brussels.		Clocks, pkgs. 98	887
Hdw. cs. 12	125	Copper, cakes 342	7,300
Saws, case. 1	10	W. wheel. cs. 1	1,000
China.		Mf. iron, pkgs. 6	265
Hdw. cs. 2	40	Shears, cs. 2	1,000
Clocks, cs. 40	650	Copper maste, sks. 5732	39,140
Mf. iron, pkgs. 1	1	Mexico.	
Bel.		Sew. ma. cs. 118	3,223
Christiania.		Cutlery, cs. 140	2,161
Mach'y, pkgs. 4	135	Hdw. cs. 159	2,467
Ag. imp. pkgs. 5	90	Ag. imp. pkgs. 4	72
Hdw. cs. 10	138	Tin plate, lxs 10	45
Copenhagen.		Firearms, case 1	36
Ag. imp. pkgs. 4	102	Iron, pkgs. 70	201
Tinware, cs. 2	35	Nails, kegs. 154	374
Copper wire, bbs. 3	400	Tacks, cs. 14	115
Ag. imp. pkgs. 22	444	bau. met. cs. 1	30
Mach'y, pkgs. 4	800	Mf. iron, pkgs. 452	2,229
Central America.		Cartridges, cs. 24	549
Hdw. pkgs. 75	1,531	Mach'y, pkgs. 64	1,778
Tinware, cs. 16	174	Clocks, cs. 94	1,032
Ag. imp. pkgs. 67	317	Boiler. cs. 1	255
Mf. iron, pkgs. 237	1,020	Tinware, case. 1	42
Clocks, cs. 8	201	Pumps, pkgs. 2	140
Nails, kegs. 20	56	Madrid.	
Revolvers, cs. 2	309	Hdw. cs. 2	77
Gun caps, case. 1	15	Malaga.	
Mf. steel, case. 1	26	Firearms, cs. 1	222
Ag. imp. pkgs. 9	233	Hdw. cs. 1	275
Sew. ma. cs. 104	1,524	Oporto.	
Cutlery, case. 4	100	Clocks, pkgs. 7	60
Zinc, pkgs. 10	139	Pern.	
Tacks, cs. 8	60	Mach'y, pkgs. 3	276
Gun Shells, case. 1	25	Sew. ma. cs. 30	262
Mach'y, pkgs. 15	304	Copper, cks. 2	230
Wire, bbl. 1	30	Pumps, pkgs. 2	83
Pumps, pkgs. 7	154	Sew. ma. cs. 30	308
Washing machine. 1	25	Santo Domingo.	
Cuba.		Nails, kegs. 122	285
Tinware, cs. 22	33	Mf. iron, pkgs. 4	16
Hdw. cs. 45	801	Hdw. cs. 10	89
Mach'y, pkgs. 67	7344	Mach'y, pkgs. 551	10,509
Sew. ma. cs. 12	241	St. Petersburg.	
Sheet iron, pkgs. 1	33	Firearms, cs. 5	2,337
Ag. imp. pkgs. 1	646	Wash. ma. cs. 15	300
Clocks, cs. 14	307	Stockholm.	
Nails, kegs. 58	159	Mf. iron, pkgs. 4	112
Pumps, pkgs. 4	164	Spanish Possessions in Africa.	
Car-wheels. 74	865	Sew. ma. cs. 30	339
Mf. iron, pkgs. 947	2,532	Hdw. cs. 1	8
Cutlery, cs. 20	287	U. S. of Colombia.	
Cartridges, cs. 6	141	Cutlery, cs. 4	87
Tacks, cs. 2	103	Mf. iron, pkgs. 156	1062
Wire cloth, cs. 8	457	Mach'y, pkgs. 30	319
Danish West Indies.		Per caps, cs. 2	140
Mf. iron, pkgs. 25	111	Shot, oxs. 20	132
Hdw. cs. 12	139	Anchors. 27	518
Dutch East Indies.		Iron, pkgs. 1482	3165
Ag. imp. pkgs. 2	55	Wire cloth, case. 1	32
Dutch West Indies.		Nails, cs. 5	39
Tinware, cs. 2	12	Pumps, pkgs. 1	22
Dutch Guiana.		Brass knobs, cs. 5	726
Hdw. cs. 43	285	Chain, length 1	218
Quick silver, box. 1	42	Sew. ma. cs. 17	359
Dresden.		Hdw. pkgs. 67	2,560
Tinware, cs. 2	73	Nails, kegs. 19	257
Dublin.		Tinware, cs. 12	367
Ag. imp. pkgs. 6	60	Tacks, cs. 5	94
Hdw. case. 1	79	Wringers, case 1	16
Ecuador.		Steel pkgs. 125	445
Mach'y, pkgs. 115	2,510	Mf. iron, pkgs. 2	60
Cutlery, cs. 1	105	Pump. cs. 1	600
Hdw. cs. 5	51	Uruguay.	
Clocks, case. 1	22	Ag. imp. pkgs. 12	348
French West Indies.		Hdw. cs. 25	808
Clocks, case. 1	22	Clocks, cs. 13	412

Advices from Cleveland, Ohio, state that on the 7th inst. the steamship Ira H. Owen was successfully launched from the Globe Iron Ship Yard. She is the third steel steamer from the same yard launched since the 1st of last February. She has been built for the Owen Line, or Owen Transportation Company, of Chicago, composed of the following named gentlemen as partners in the organization: Ira H. Owen, R. C. Hannan, I. W. Sharp, L. Windmuller, and C. B. Calder, of Chicago; H. H. Clough and Park Foster, of Elyria, Ohio; John B. Clough, of Missouri, and F. H. Van Cleave, of Escanaba. The cost to those men is \$165,000. She is patterned after and largely finished like the steamer Spokane, built by the same company, except that she is 12 feet longer and has a foot more beam. Her measurements are as follows: Length over all, 276½; keel, 262; beam, 38, and hold, 23. Her power is two boilers, each 14 x 9 feet, capable of carrying 112 pounds of steam; a compound engine, cylinders 28 and 50 inches, with 42 inch stroke; wheel 11 feet, with 14 foot lead. Her estimated speed is 12 miles per hour, and her carrying capacity 2470 tons. It will take about 15 days to finish her up, when she will go into the ore trade between Ashland and South Chicago. Another steel steamer will at once be put upon the blocks where the Owen came off. She is to be built for the Lehigh Valley Company, will measure 310 feet over all, and will be launched next May.

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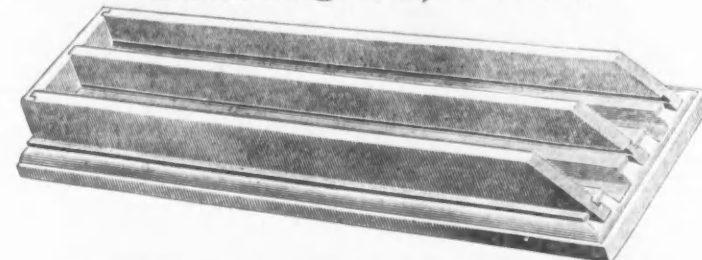
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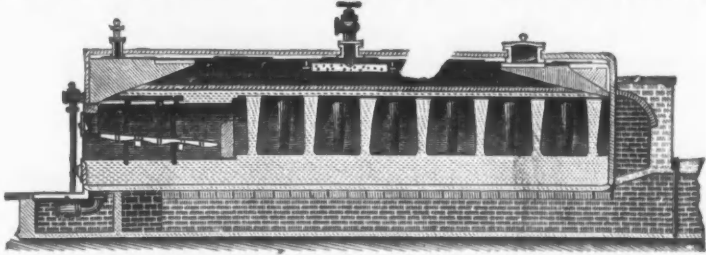
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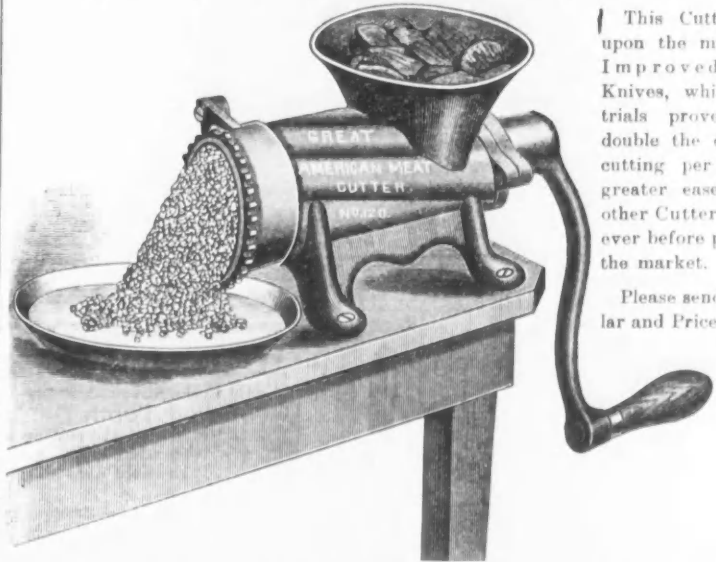
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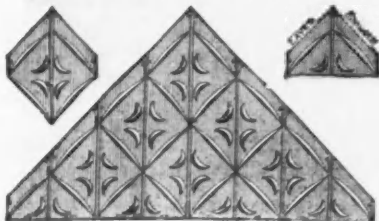
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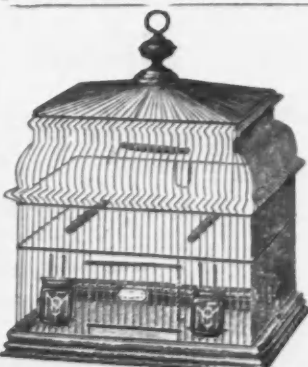
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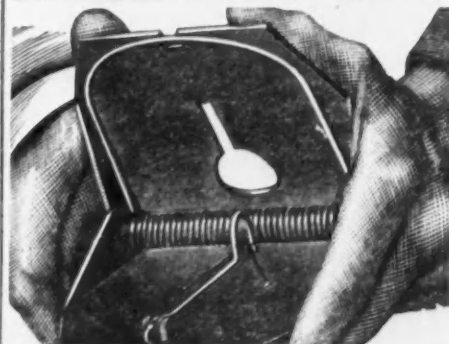
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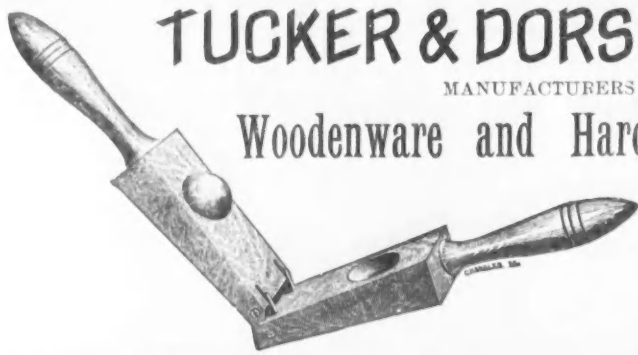


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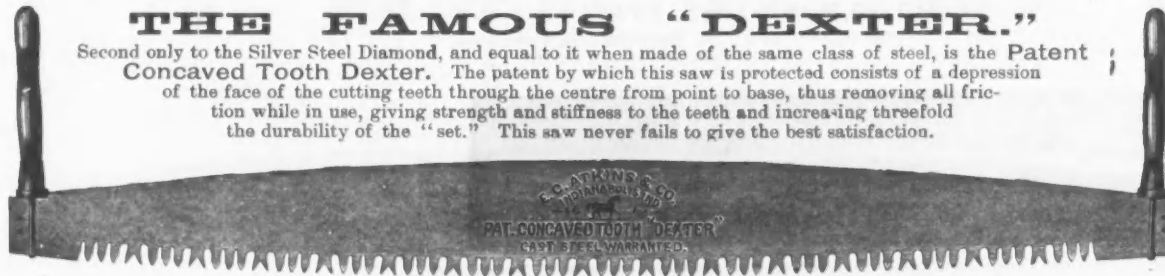
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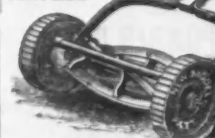
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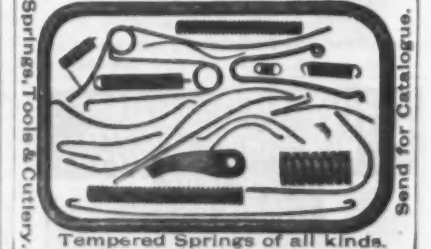
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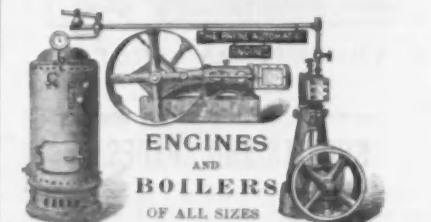
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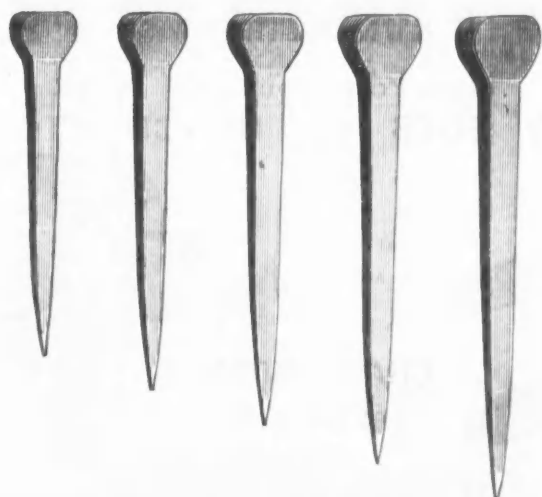
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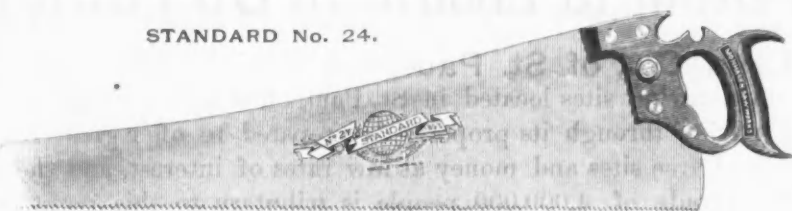
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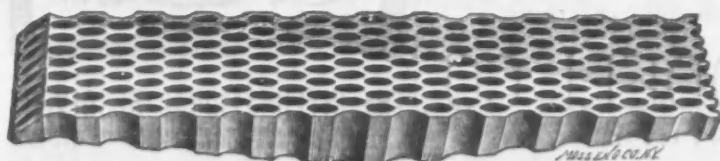
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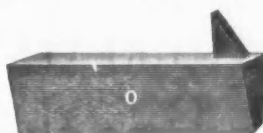
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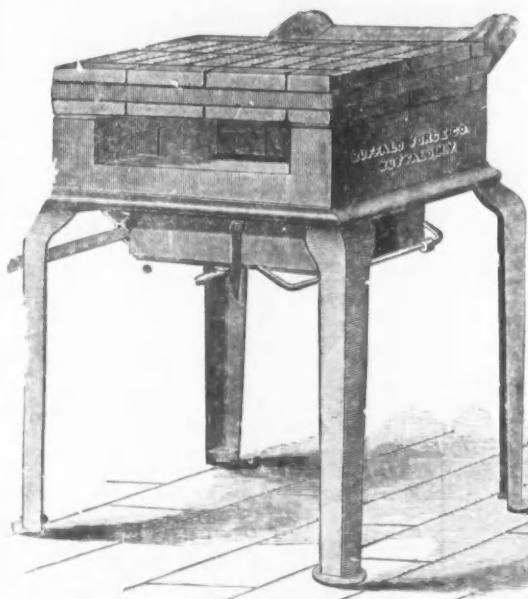
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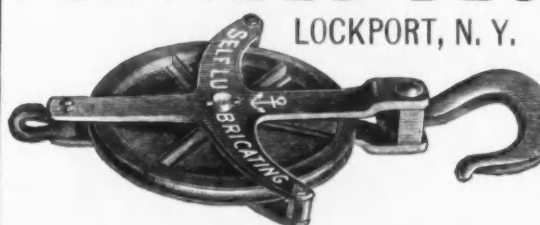
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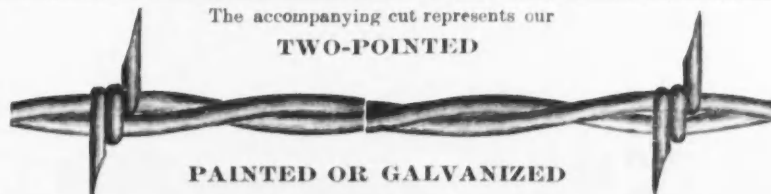
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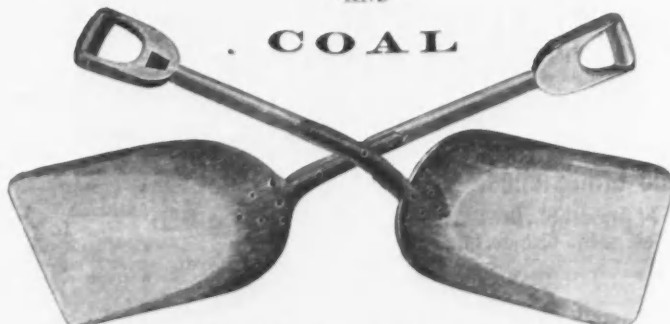
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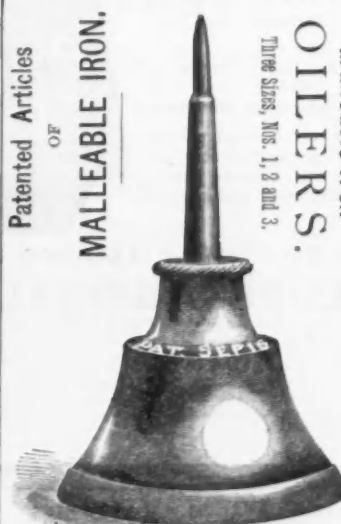
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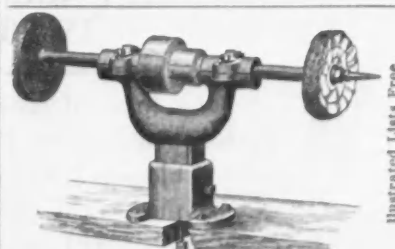


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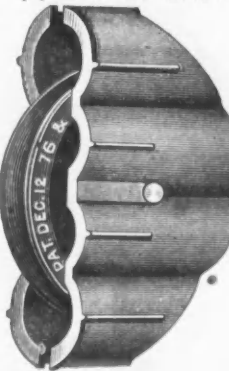
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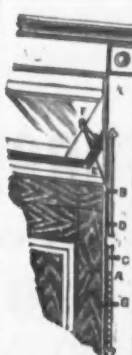
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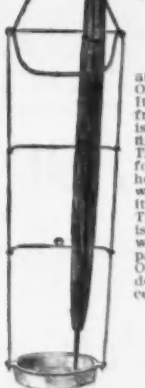
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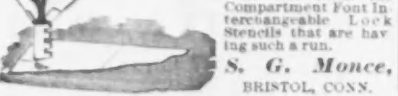
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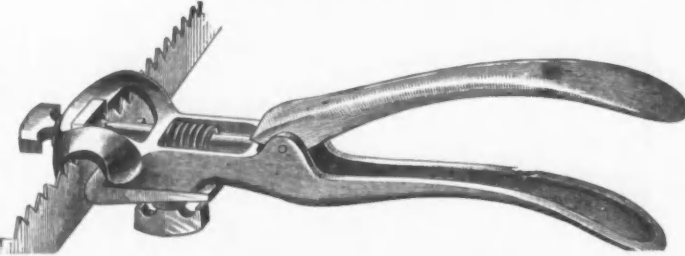


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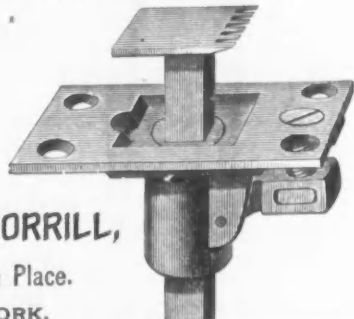
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The Union Land Co., of St. Paul, with a paid-up capital of \$2,000,000, owning magnificent manufacturing sites located in St. Paul, on the Mississippi River, with two trunk lines of railroad passing through its property, is prepared to offer great inducements to manufacturers in the way of free sites and money at low rates of interest, and the backing of a powerful company. The trade of 4,000,000 people is tributary to this point, affording the greatest opportunity for successful manufacturing. The workings of the Interstate Commerce bill will render Eastern competition practically out of the question.

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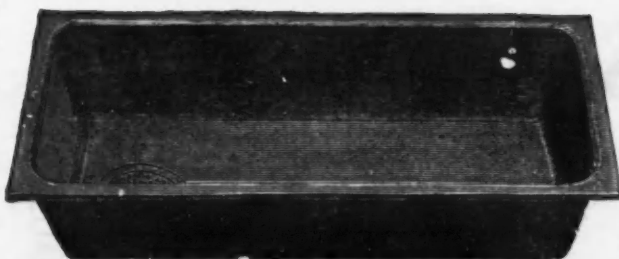
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FOR BUTLER'S PANTRY AND KITCHEN. (Pat. April 12, 1881.)

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These sinks, being made of wrought steel, will not break from heat, cold, or any cause whatever.

We furnish these sinks painted or galvanized, as desired, at prices—freedom from breakage considered—less than for sinks made from cast iron.

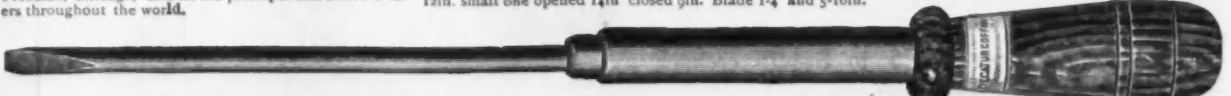


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By pushing on the end of handle it will drive a screw in 1/4 of the time of the old method. Sold by C. E. Jennings & Co. N. Y.; Hibbard, Spencer, Bartlett & Co., Chicago; Simmons Hardware Co. St. Louis; Walbridge & Co. Buffalo, N. Y.; Carlin & Fulton, Baltimore, Md.; Burdett & Williams, Boston; Biddle Hardware Co. Philadelphia; A. Freeman, Chicago, and all the principal Hardware Dealers throughout the world.

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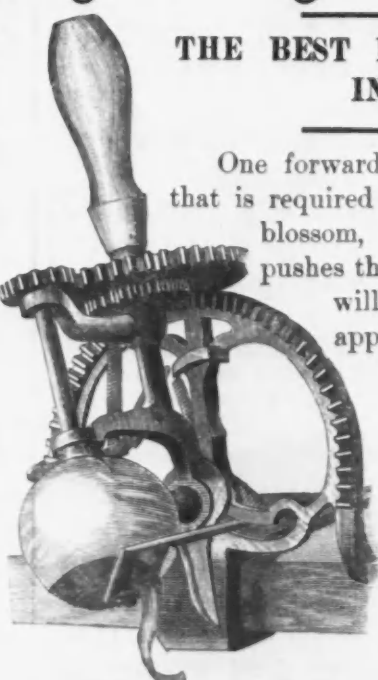


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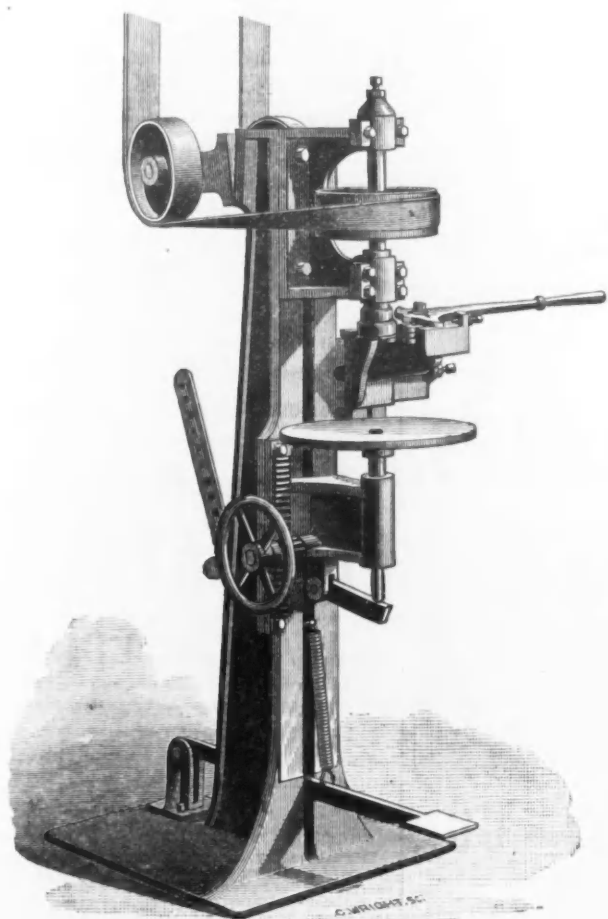
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Double Seaming Machines,  
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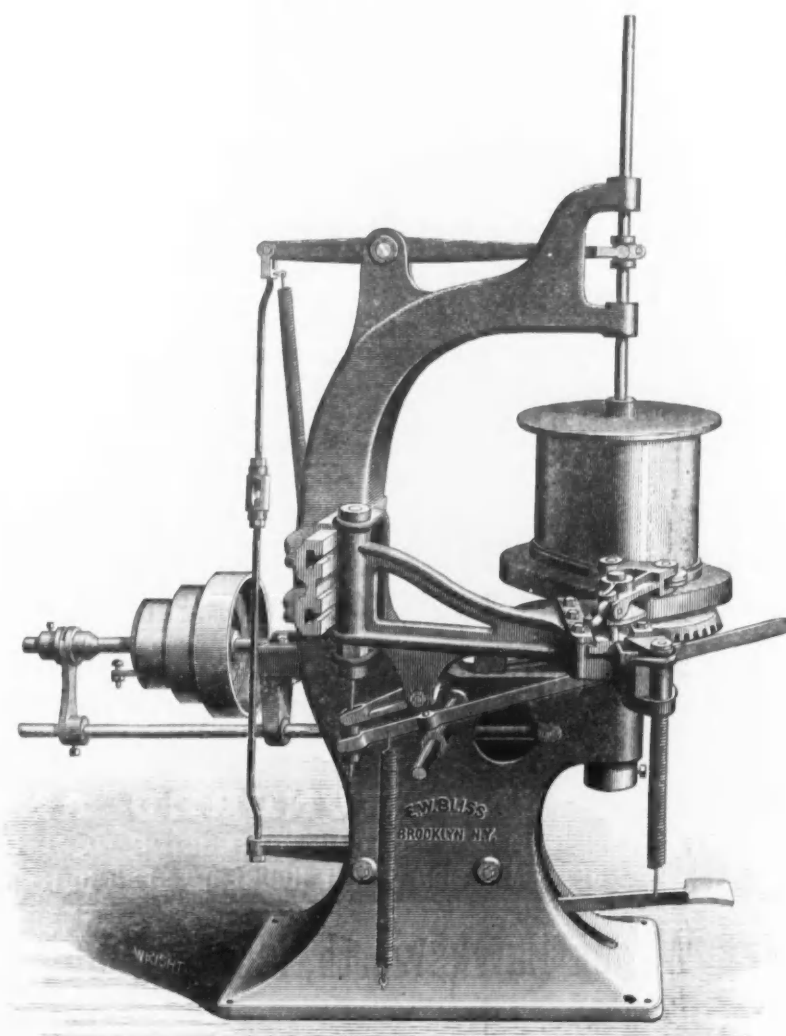
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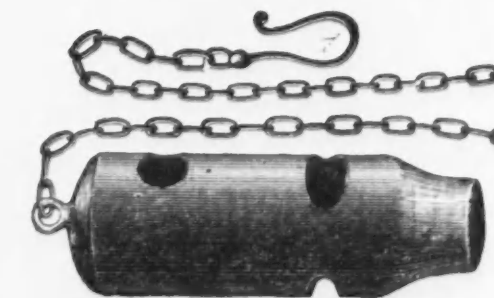
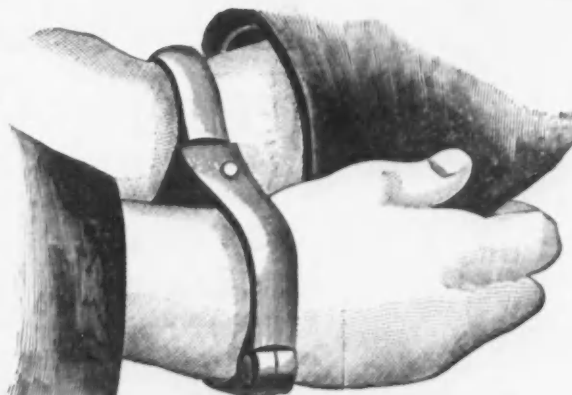
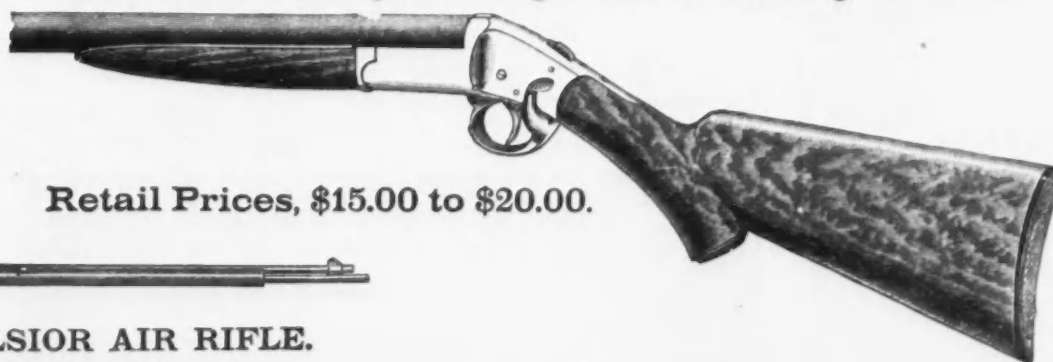
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LIBERAL DISCOUNT TO THE TRADE  
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Is made of steel and is easily put in position. Catches and holds no snow or ice. Door hung thereon cannot jump the track. Is not subject to decay. Requires no fitting, but is ready at once. May be used with hangers of other manufacture.

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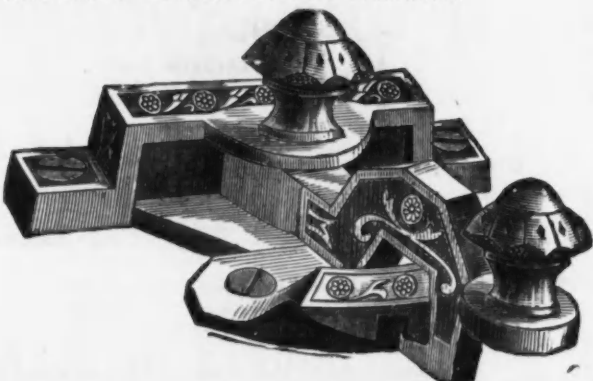
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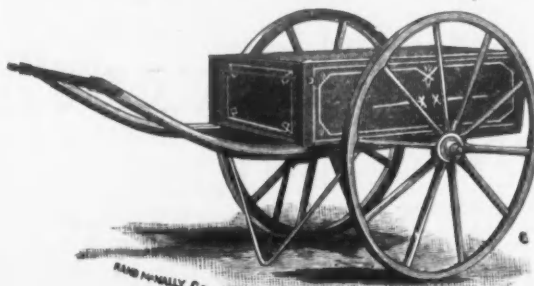
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 Special net prices to be found in Iron Age whenever changes occur.  
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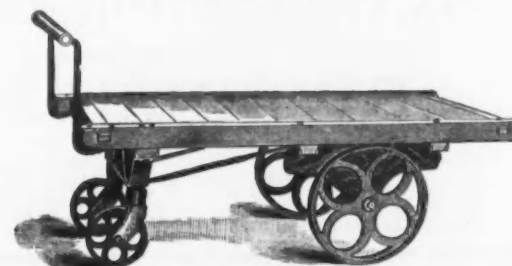
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These planes (with a smooth face) have been in the market for many years, obtaining a steadily increasing trade as they have become known. We claim for them the utmost simplicity of construction, prompt adjustment and superior beauty of style and finish.

The clamp plate and lever are nickel-plated; the handle is of checkered rubber, which is stronger than any wood handle, and affords an easy, firm grip—also made with nickled iron handle.



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This Cut shows the surface of our new Corrugated Iron Planes. The corrugations afford ample air spaces, and reduce the traction and friction to the minimum. Same price as smooth face.

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The Clamping Plate and Lever are nickel-plated; the Beechwood has been thoroughly seasoned and is a thicker block than usual, though the Plane is no heavier than those already in the market.

No. 72.	Smooth Plane, 7 1/2 x 1 1/2 inch Cutter,	\$2.00
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74.	" " 8 1/2 x 1 1/2 " " "	2.00
75.	Handled Smooth Plane, 9 x 1 1/2 inch Cutter,	2.50
76.	" " 10 x 1 1/2 " " "	2.75
77.	Jack Plane, 15 x 1 1/2 inch Cutter,	2.35
78.	" " 15 x 1 1/2 " " "	2.00
79.	Fore Plane, 18 x 1 1/2 inch Cutter,	2.75
80.	" " 20 x 1 1/2 " " "	2.75
81.	Jointer Plane, 22 x 1 1/2 inch Cutter,	3.00
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83.	" " 26 x 1 1/2 " " "	3.35
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The Adjustable Mouth Smooth Plane is a new feature, and meets with a great deal of favor.

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With these devices, Transoms may be opened and closed at will with ease and locked in position, no other fastenings are required, any one can put them on. CAUTION, look for the Trade Mark on the handles.  
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#### Price List "Crown" Lifters.

No.	Length	Size of Rod	Price Each.
43	3 feet	3/4 x 1/2	Bronzed Iron, \$0.55
44	4 "	" "	" " 0.65
45	5 "	" "	" " 0.75
43 1/2	3 "	" "	Nickel Plated, 1.75
44 1/2	4 "	" "	" " 2.00
45 1/2	5 "	" "	" " 2.25

#### LIST.

APRIL 8th

1886.

#### Price List "Star" Lifters.

No.	Length	Size of Rod	Price Each.
83	3 feet	3/4 x 1/2	Bronzed Iron, \$0.70
84	4 "	" "	" " 0.80
85	5 "	" "	" " 0.90
83 1/2	3 "	" "	Nickel Plated, 2.00
84 1/2	4 "	" "	" " 2.25
85 1/2	5 "	" "	" " 2.50

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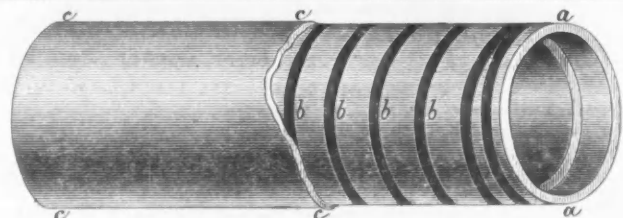
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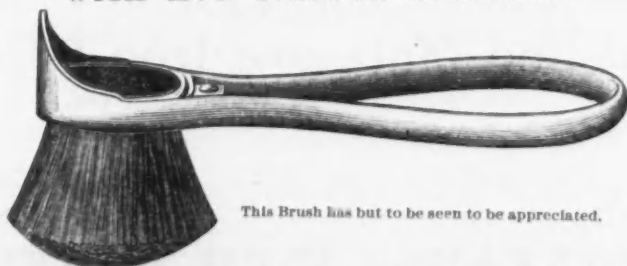
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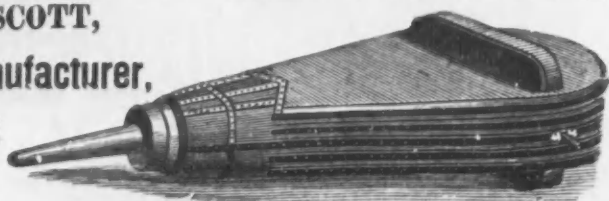
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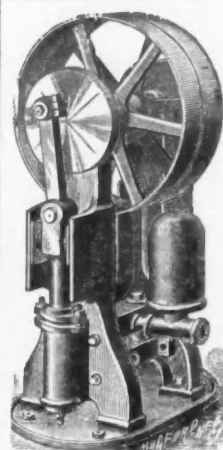
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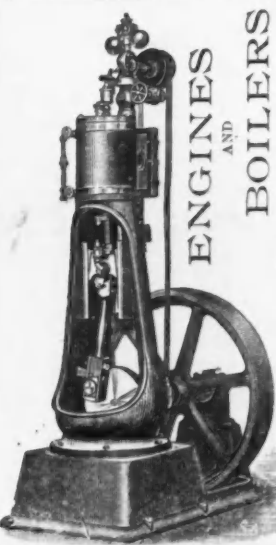
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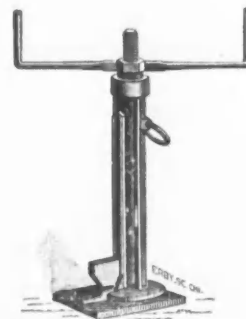
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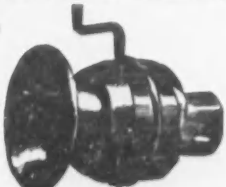
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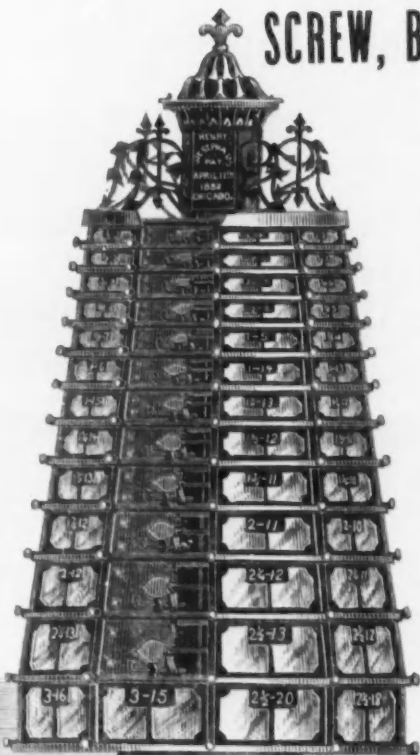
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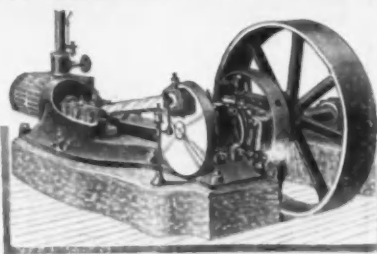
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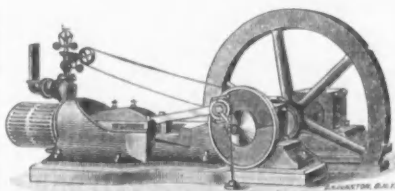


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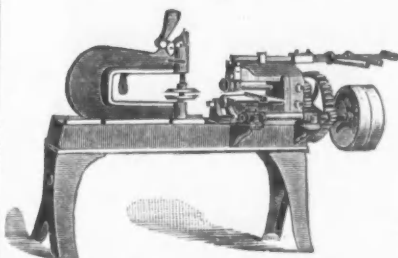
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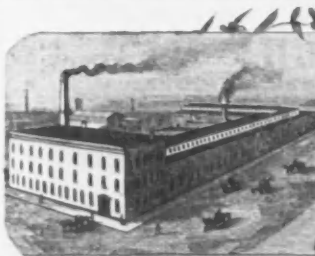
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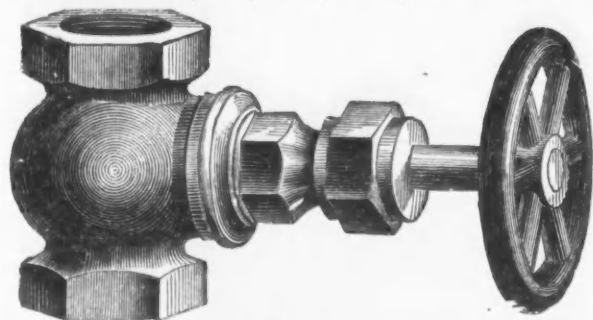
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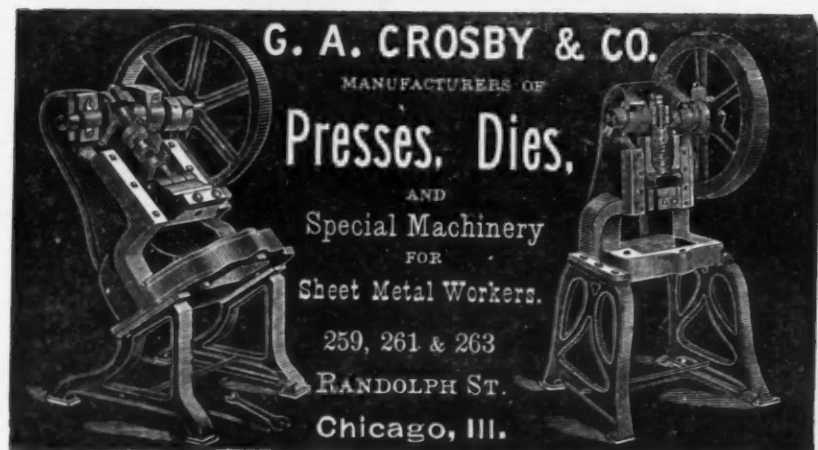
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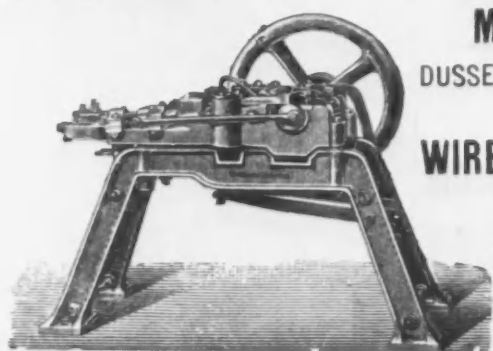
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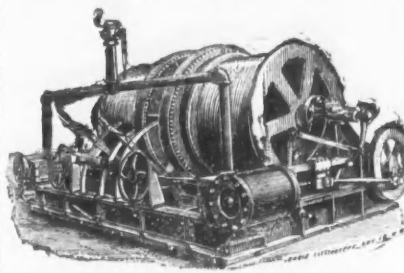
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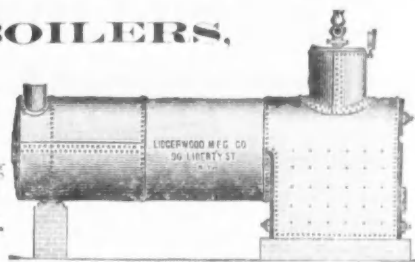
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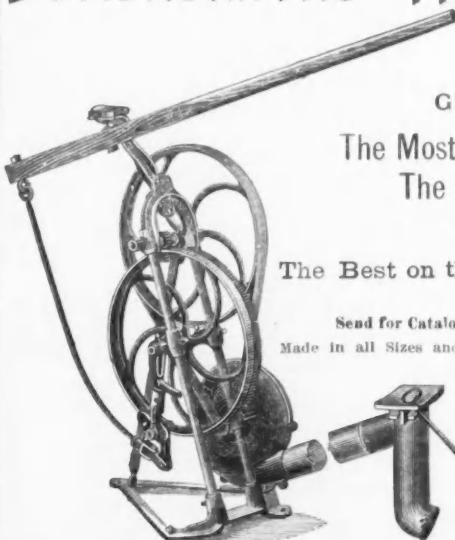
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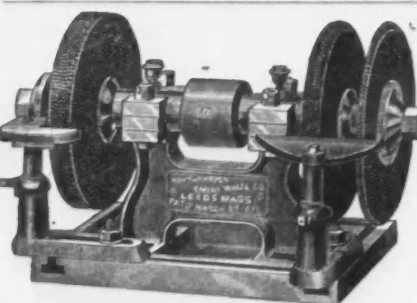
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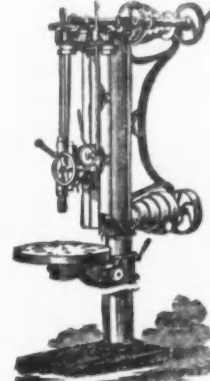
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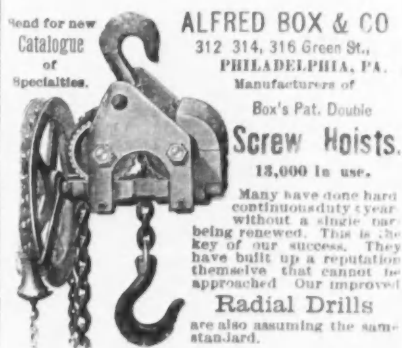
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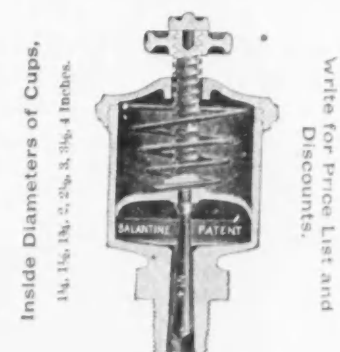
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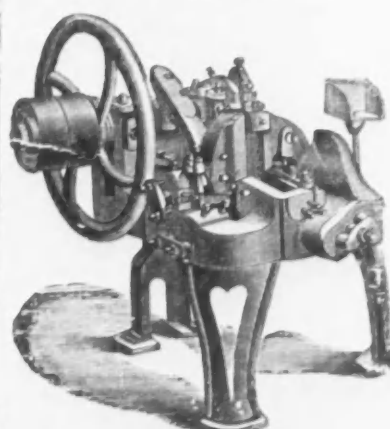
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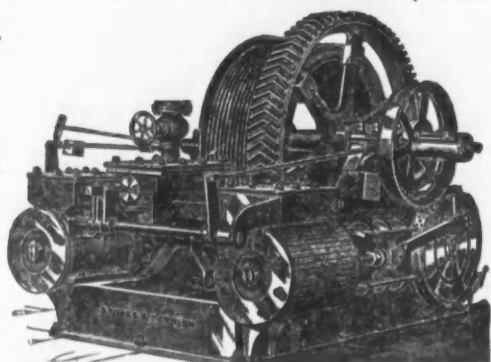
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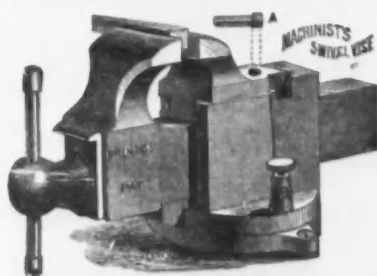
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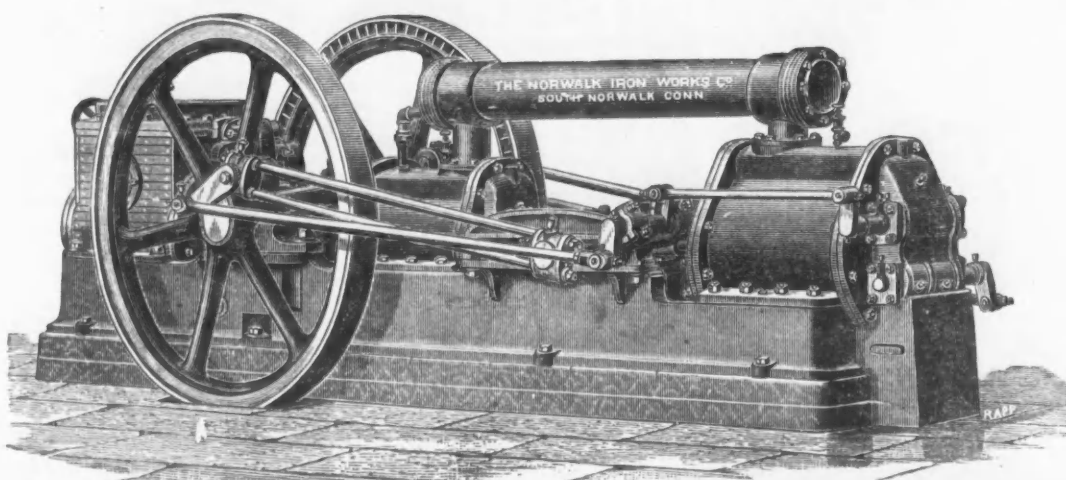
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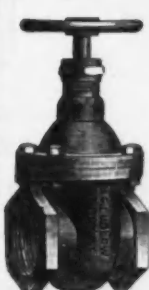


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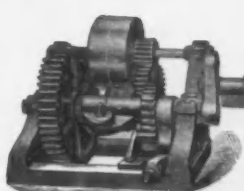
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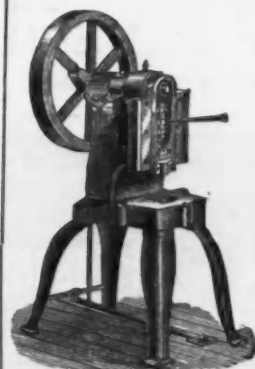
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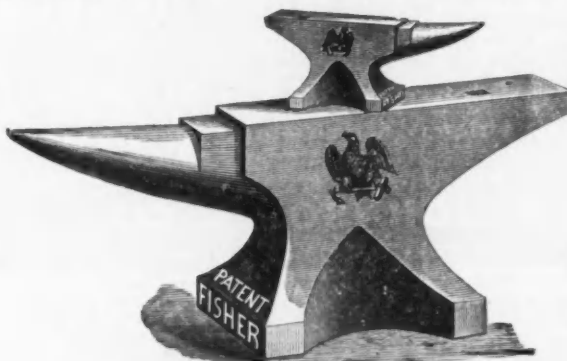
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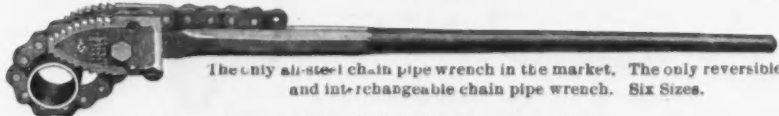
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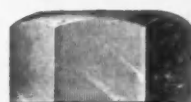
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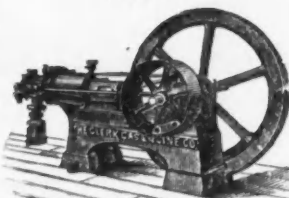
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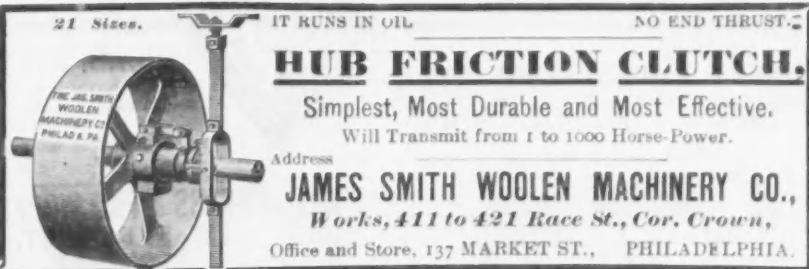
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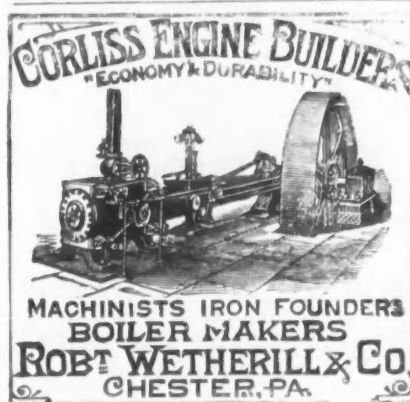
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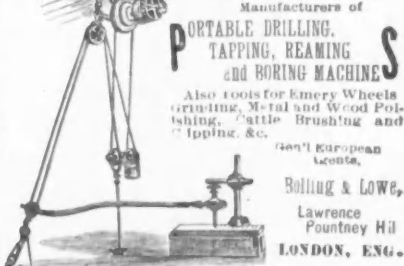
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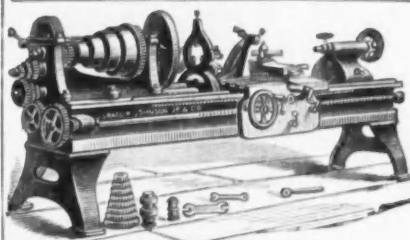
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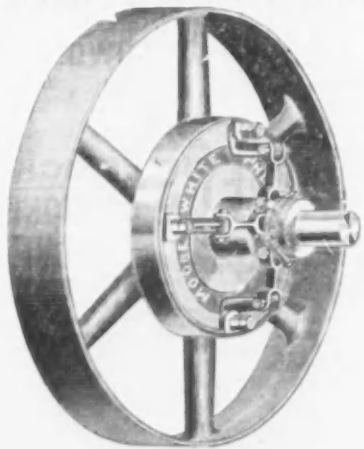
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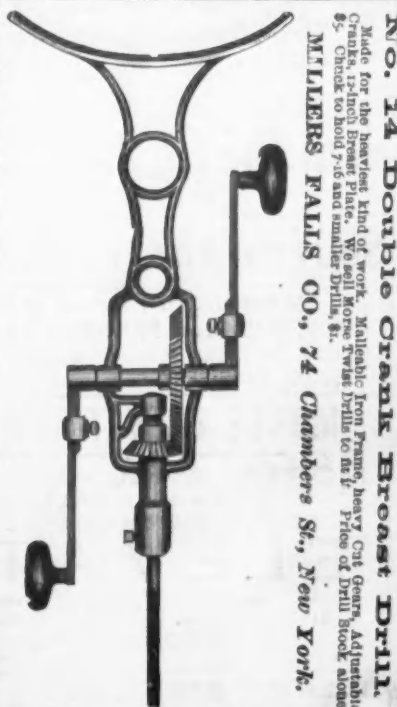
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